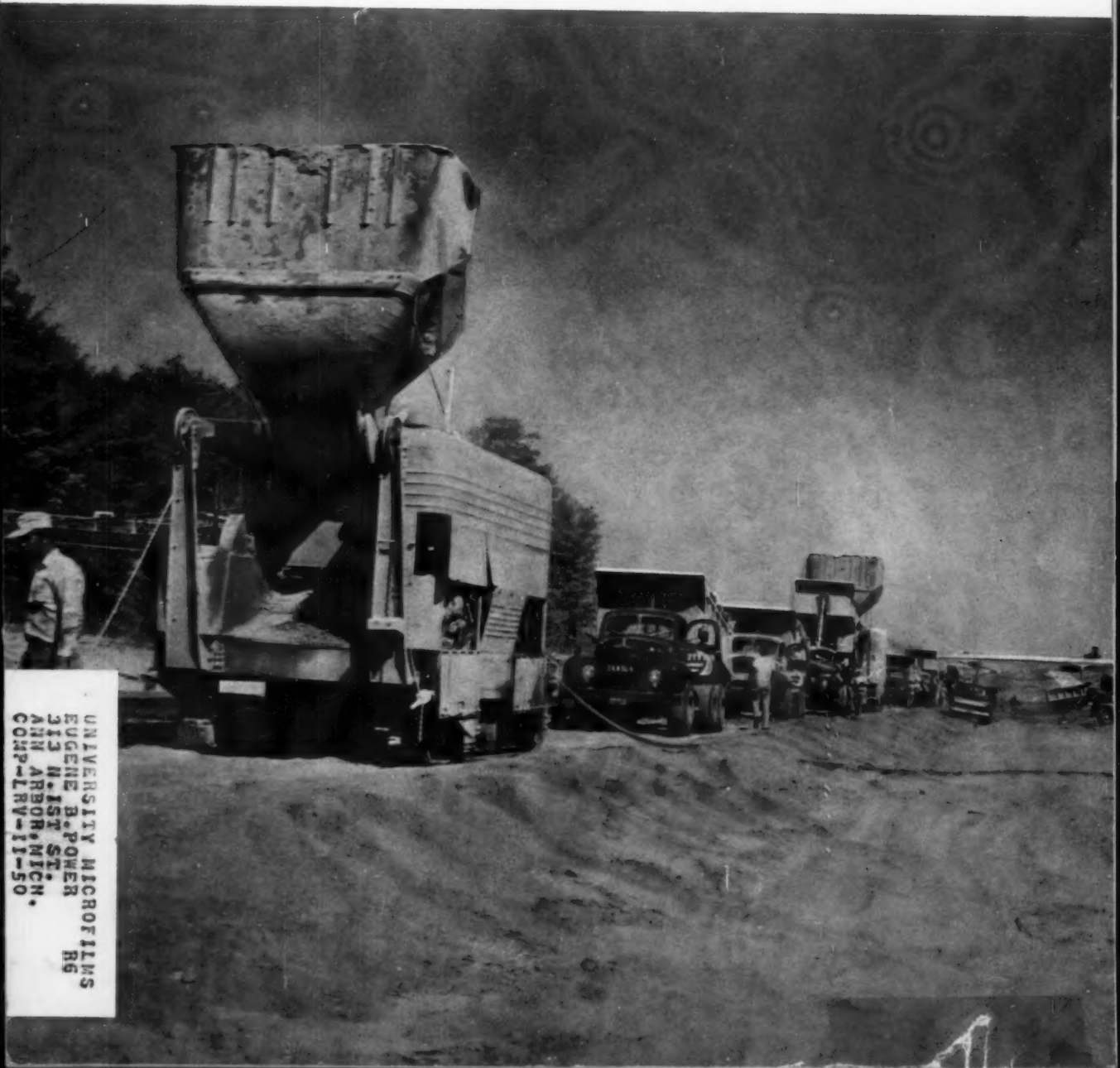


Nuclear Soil Testing Speeds  
Earthmoving Job Decisions page 42

September, 1961

# ***ROADS<sup>AND</sup>STREETS***

A GILLETTE PUBLICATION



UNIVERSITY MICROFILMS  
EUGENE B. POWER  
313 N. 1ST ST.  
ANN ARBOR, MICH.  
COMP-LTR-11-50

# RENT A JACKSON

IT'S A SOUND, NO-RISK WAY OF DISCOVERING THE FASTEST, MOST EFFECTIVE AND BY FAR THE MOST INEXPENSIVE METHOD OF COMPACTING GRANULAR SOILS; BASE COURSES, FILLS AND SOIL-CEMENT MIXES.



Changing from the 13 ft., 3 inch working width to 88 inches overall for road travel or maneuverability on the job is accomplished hydraulically in just 30 SECONDS.



The new widening attachment (optional at added cost) is raised or lowered instantly. Makes the JACKSON by far the most efficient compactor for widening projects.



As one contractor on a federal highway project put it: "We rented this vibratory compactor from our dealer just for this job, but we're so pleased with its performance that we'll probably buy it. It has the versatility and punch to handle all our compacting, both big and small jobs, on slopes and level ground — QUICKLY."

**VERSATILITY?** Look at the illustrations. Then consider, too, that the individual compactor units may be fitted with operating handles and used as self-propelling units to compact the tight places other equipment can't touch. Also that the JACKSON operates in either direction, no deadheading or turning around is required.

**PUNCH?** 4200 3-TON BLOWS PER MINUTE from each of the compactor units provide extremely high productivity. 100% of specified density is frequently attained in a single pass. And the JACKSON does not leave the top 1-inch of the lift in a loose condition . . . a very important consideration. Maintenance and operational costs are extremely low.

*Discover the outstanding time-and-money-saving opportunities afforded by the JACKSON MULTIPLE COMPACTOR by renting one from your Jackson Distributor. Name and further details on request.*

. . . for more details circle 304 on enclosed return postal card

# JACKSON VIBRATORS, INC.

LUDINGTON, MICHIGAN



**so easy  
to handle**



**so easy  
to install**



**so  
long-lasting**



**because**

**it's corrugated galvanized sheet steel**

You don't have to baby a drainage structure made of Beth-Cu-Loy corrugated galvanized steel. Steel won't crack or spall or crumble. You don't always need hoists to lift or move it, either; a 14-ft length of 18-in. pipe made from 16-ga Beth-Cu-Loy weighs but 214 lb. Two men can easily handle that!

With its long lengths and simple field joints, Beth-Cu-Loy drainage pipe can be laid just as fast as the trench can be

dug. No sealing compounds, no curing time with corrugated galvanized steel. And once it's in, a Beth-Cu-Loy structure will last the life of the project. Many steel culverts are still in service after 40 and 50 years.

Beth-Cu-Loy sheets conform in every way to the specs of the AASHO. Your fabricator will gladly furnish whatever details you'd like to have about Beth-Cu-Loy sheets. Or write direct to us at the address below.



*for Strength  
... Economy  
... Versatility*

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.  
Export Sales: Bethlehem Steel Export Corporation

**BETHLEHEM STEEL**



... for more details circle 283 on enclosed return postal card

# ROADS AND STREETS

# SEPTEMBER, 1961

HIGHWAYS • BRIDGES • AIR FIELDS • HEAVY CONSTRUCTION

## Industry Affairs

- 19 Washington Newsletter
- 34 Keep Road Program Unsnarled—ARBA Board Concern
- 41 Highway Morality Can't Be Left to States (Editorial)

## Contractor Management, Equipment Utilization, Job Methods

- 45 How a Pension Plan Can Help the Small Contractor
- 46 Bailey Bridge Cut Freeway Haul Road Costs
- 49 Central Mix, Agitator Delivery, Special Spreader
- 53 Forming Plan Simplifies Bridge Job
- 60 New Automatic Machine Fine-Grades Base Without Forms
- 84 Jet Runway Gets Fast Weekend Seal Coating

## Engineering, Technical, Maintenance

- 42 Nuclear Testing Expedites Airport Grading Job
- 66 Latest Findings on Water-Reducing Retarders for Concrete
- 70 'Robot' Power Mower Covers Hard-to-Get-at Slopes
- 71 Under-Asphalt Herbicides Prove Out in Test
- 75 Colorado Studying Nuclear Test Correlation
- 80 NBCA Releases Study on Mix Moisture, Riding Quality

## Departments

- 23 People
- 28 New Publications
- 56 Traffic Safety
- 79 Maintenance
- 80 Views and Comments, by H. G. Nevitt

## Where to Buy It

- 92 Reader Inquiry Card
- 92 New Products
- 122 Manufacturers' Literature
- 111 Clearing House
- 124 Advertisers' Index



### FRONT COVER SCENE

Recall the world-record paving run of Denton Construction Co., of Grosse Point Woods, Michigan? As reported in October, 1960 Roads and Streets, it was 8,036 ft. of 9 in. by 24 ft. slab in a single day. The cover this month shows the four Rex pavers and string of Mack trucks at work on that job.

This year the Denton firm is paving another of the same Michigan I-75, with no attempt to break records due to the rail delivery of aggregate and cement and the long batch haul.

The firm is still a believer in 34-E pavers, having added a fifth as a standby, and also adding new Mack trucks and a Butler 1,000-bbl. cement elevator. Denton's 1961 late-summer backlog of two million square yards keeps this firm in the nation's forefront as a concrete paving outfit.

Accepted as Controlled Circulation Publication at Milwaukee, Wisconsin. Published monthly. Subscription \$4.00 per year (\$7.00 foreign.) Form 3579 requested to be returned to Gillette Group, Magazine Publishing Division, the Reuben H. Donnelley Corporation, 22 W. Maple St., Chicago. Copyright, 1961, The Reuben H. Donnelley Corporation. Entire contents of this publication covered by general copyright. All rights reserved. Title registered in U. S. Patent Office.



# UP FOR A BIG BID?

Let Goodyear keep  
your tire costs down

**FINDING THE WORK FACTORS**—Goodyear Big-Tire Specialists are prepared to analyze your tire needs with an eye to keeping costs under control. These specialists will check the terrain, loads, climate, roads, schedules and speed problems that confront you, and can select the right Goodyear tires to help you solve them.

**PUTTING BIG-TIRE KNOW-HOW TO WORK**—From the world's greatest wealth of experience, Goodyear Big-Tire Specialists are uniquely qualified to help you. And they'll provide the best in tread and body designs to help safeguard your contract and your profits.

**SETTING UP BIG-TIRE SERVICE**—You say the word, and Goodyear Big-Tire Specialists will set up a tire-maintenance program at the job-site to help save you man-hours, machine-hours and useful tire life. In addition, Goodyear Contractor Service *will travel* with your job—handle all your tire maintenance and repair needs.

#### With BIG-TIRE PERFORMANCE

##### Example: SUPER HARD ROCK LUG

Here's one of Goodyear's Big Tires for the Big Bid you have coming up. It's the SUPER HARD ROCK LUG, built for heavy loads and no roads to make the going easy. Triple-tough 3-T Nylon Cord for the greatest tire stamina, plus new, special cut-shrugging rubber compounds, make this tire a real cost-saver in the roughest off-highway service.

For details on this and other Goodyear special-duty tires, and the Goodyear Contractor Service, see your Goodyear dealer. Or write Goodyear, Truck Tire Dept., Akron 16, Ohio.

Lots of good things come from

# GOOD YEAR

MORE TONS ARE HAULED ON GOODYEAR TRUCK TIRES THAN ON ANY OTHER KIND

ROADS AND STREETS, September, 1961

... for more details circle 300 on enclosed return postal card



NEWS FROM FLINTKOTE:

# SPECIALLY DESIGNED PAVING PRODUCTS

**For sealing joints,  
For surface sealcoating,  
For concrete bonding,**

**ASK FOR FLINTKOTE ENGINEERING DATA SHEETS ON:**

**M-200:** Fast setting, polymer type joint and crack sealer for concrete pavements—cold applied. Offers best resistance to jet aircraft heat and blast operations under wide temperature variations. Meets Interim Fed. Spec. SS-S-00200a.

**H-100:** Modified polymer type, two-component compound for concrete pavement and structure joints in highway and non-critical airfield areas. Has many advantages over other hot or cold sealers. **FLINTSEAL®** (Regular—SS-S-164) and (Jet Fuel Resistant—SS-S-167b): rubber bearing, hot-poured types for durable sealing of joints and cracks to prevent leaking and provide resistance to wear under repeated freeze-thaw cycles. Meet Fed. Spec. for both types.

**FLINTAR®** (Regular—R-P-00355a) and (Rubberized): Coal tar pitch emulsions for sealcoating and slurry coating bituminous driveways, parking lots, roads, airfield pavements. High resistance to petroleum fuels, oils—extends life of black-top. Meet all specifications.

**FLINTCRETE®:** Polysulfide/epoxy compounds (grout and binder) for bonding old and new concrete in restoration and repair of pavements and structures, bonding curbs, traffic markers, skid-proofing and many other adhesive requirements. Procedures fully detailed.

\*T.M. OF THE FLINTKOTE COMPANY

**SEND COUPON BELOW OR WRITE TODAY:**

Paving Products Section,  
The Flintkote Company,  
P.O. Box 157, Whippany, N.Y.

Name \_\_\_\_\_

Firm \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

Please send data on \_\_\_\_\_



**America's Broadest Line  
of Building Products**

... for more details circle 293 on enclosed return postal card

## ROADS AND STREETS

Devoted to the design, construction, maintenance and operation of highways, streets, bridges, bridge foundations and grade separations; the construction and maintenance of airports. Represents 69 years of continuous publishing in the highway field; combined with Engineering and Contracting and Good Roads Magazines, established in 1892.

**HAROLD J. MCKEEVER**, *Editor-In-Chief*

**JAMES R. CUMMINGS**, *Associate Editor*

**FRANK REID**, *Associate Editor*

**H. K. GLIDDEN**, *Field Editor*

**DUANE L. CRONK**, *Washington Editor*

**H. V. JUNG**, *Production Editor*

**DOUGLAS McDONOUGH**, *Assistant Editor*

**ALVIN BARKOW**, *Products Editor*

**GEORGIA ZOGRAFOS**, *Editorial Secretary*

**JAMES P. APROBERTS**,

**H. G. NEVITT**, **R. L. PEURIFOY**,  
*Contributing Editors*



**Gillette Group**

**Magazine Publishing Division**

**The Reuben H. Donnelley**

**Corporation**

*Editorial and Advertising Offices:* 22 West Maple Street, Chicago 10, Ill. (Phone Superior 7-1581.) Halbert S. Gillette, Publisher; Robert T. Wilson, General Sales Manager; Fred H. Bowes, Representative; E. Bender, Clearing House Manager; J. L. Latta, Advertising Production Manager; L. R. Vickers, Circulation Manager; A. W. Lehmann, Market Research and Sales Promotion Director.

*New York Office:* 15 East 40th St., New York 18, N. Y. (Oregon 9-7750-7751.) Fred Michel, Eastern Manager.

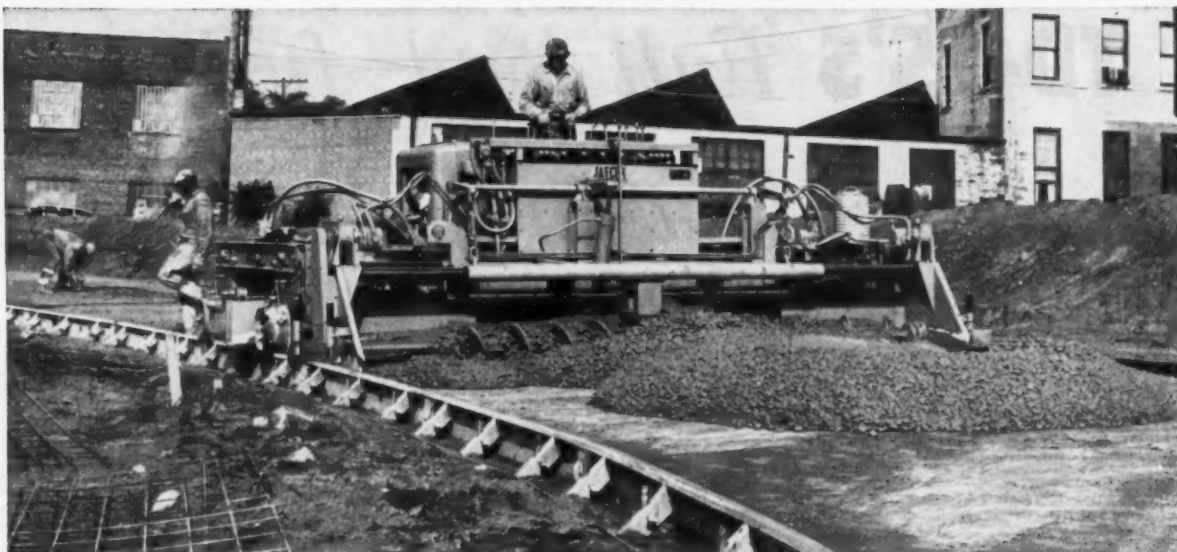
*Cleveland Office:* Trace Building, 3100 Wooster Rd., Cleveland 18, Ohio. (Editorial 1-2267.) Ray Keine, Manager.

*West Coast:* 1126 Del Rey, Pasadena, California. (Sycamore 4-6328.) J. A. Osborne, Manager.

*Officers:* Curtiss E. Frank, Chairman of the Board; Hamilton B. Mitchell, President; Edward A. O'Rourke, Vice President; Fred C. Ash, Secretary-Treasurer and General Counsel; Karl G. Clement, Controller.

### OTHER GILLETTE GROUP PUBLICATIONS

Rural Roads • Street Engineering  
World Construction • Caminos y  
Construcción Pesada



**OVER 1200'—2140 SQ. YDS.—OF FLARED AND SUPER-ELEVATED INTERCHANGE SLAB IN ONE DAY—ON TWO RAMPS!** Jaeger's one-man Spreader-Finisher started work on the new Shoreway interchange in downtown Cleveland, Ohio, at 6:50 a.m. By noon, the first ramp (704') was completed—base, reinforcing steel and top course. After moving to another ramp, 500' more was completed by 4:30 p.m. Photo shows spreading and striking off of base course.



**SPREADING, STRIKING OFF AND FIRST PASS ON TOP COURSE WITH OSCILLATING DIAGONAL SCREED.** The ramps flare from 14' to 18' with super-elevations to 13½" in 18' slab. The same Jaeger 12'-18' Spreader-Finisher also placed the 240' acceleration lanes which varied from 14' down to 2'. Horvitz Company, of Cleveland, Ohio, was the contractor.

## One-man gang

**Simplifies and speeds interchange work**

It spreads and finishes. Self-widens for 6' of flare. Lays super-elevations with diagonal screed. Lets you pave ramps as fast as you can pour!

*Flexible* is the word for Jaeger's 12'-18' Spreader-Finisher. That's why it's the most efficient machine—a real "one-man gang"—on variable-width interchange work. Traction wheels and spreading screw shaft are infinitely self-adjusting by hydraulic power. Lays any width

from 12' to 18' without stopping. Screed end shoes have same infinite adjustability, with ratchet lever.

On super-elevations, finishing screed hydraulically adjusts to any diagonal for positive concrete placement against the higher form. A turn of a ratchet lever raises or flattens the overall crown of the screed.

Dual spreading screws can be independently speeded up, reversed, raised or lowered by hydraulic

power. Handle dual-drum paver output with ease and perfect control.

Owners report saving up to hundreds of dollars a day on interchange work. Ask your Jaeger distributor for details or write THE JAEGER MACHINE CO., Columbus 16, Ohio. JAEGER MACHINE CO. of Canada Ltd., St. Thomas, Ontario. Worldwide sales and service through Jaeger International Corp., Apartado 137, Panama, R. P.

## JAEGER HYDRAULIC PAVING EQUIPMENT

RS-223

... for more details circle 306 on enclosed return postal card

**TD-25'S** *Full load, full pass  
ends load-dropping, track—*





# PLANET-POWERED PUSH

## —stopping steering losses

**You Power-steer the International TD-25 by power-shifting either track. Full-time "live" power on both tracks, gives you full-profit production!**

You make full-load turns without spillage — because Planet Power-steering eliminates load-spilling, load-limiting "dead-track drag."

With Hi-Lo on-the-go power-shifting, you shift down, to dig hard materials — shift up, to "run" with the load. When push-loading with the "25," you maintain solid contact on straight-away or curve — to speed heaping the bowls and get gear-higher "kick-outs"!

**Exclusive Planet Power-steering makes the TD-25 the industry's only power-shifted 8-speed gear-drive, or 4-speed torque-converter tractor. And only the "25" is powered by the free-breathing, dual-valved 230-hp DT-817 turbocharged International diesel!**

**Compare bulldozing yardage delivered — time the push-loading advantages of the Planet Power-steered TD-25. Prove to yourself how "live-track" TD-25 push can multiply your "tight-bid" profits. Let your International Construction Equipment Distributor demonstrate!**

- ◆ **Moving thousands of tons of outcrop shot-rock for mountain road right-of-way, this TD-25 picks up and delivers its full loads without sluing or slipping. Reason: with Planet Power-steering you run one track in high, the other in low speed range to equalize offset loading. And you steer with full power on both tracks full time — to avoid load-dropping interruptions!**

**Power-gaining Planet Power-steering helps you heap-load scrapers in record time — right where clutch-steered pushers lose half their push! Power-shifting either track up or down keeps solid push-block contact on curves. Power-shifting up, on-the-go, gives gear-higher kick-outs than ordinary. And with 7.5 mph reverse, the "25" repositions faster than slower rigs!**

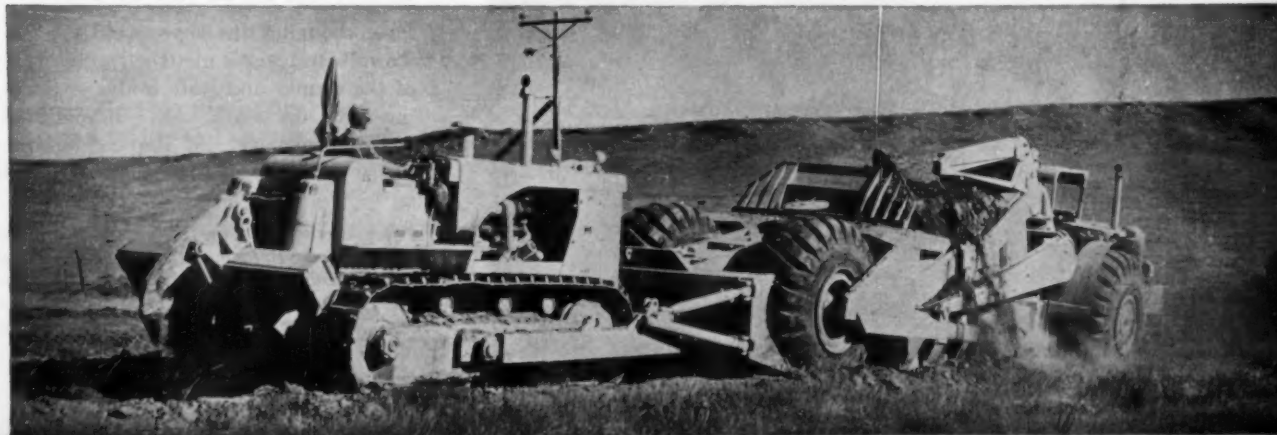


◆ **"Hanging a bench" on a mountainside, the TD-25 operator either upshifts the bank-side track — or downshifts the outside track. Then he makes full cuts under full power without "bank-nosing," rear-end skidding, or "lever fighting."**



***International  
Construction  
Equipment***

**International Harvester Co.,  
180 North Michigan Ave., Chicago 1, Ill.  
A COMPLETE POWER PACKAGE**





*Three-quarters of the "Old Town" Bridge is shown in use at its new site over Calleguas Creek, Ventura County.*

## How to make two new bridges from



... for more details circle 284 on enclosed return postal card

***But don't try it unless  
you've got a steel bridge  
to start with.***

When boom years came to San Diego and its suburbs, traffic zoomed. The "Old Town" Bridge you see at lower left was forced into retirement by the new four-lane, freeway-type steel bridge directly behind it.

### ***So they sold the 35-year-old bridge***

Even though it was 35 years old, the "Old Town" Bridge *still* met the specifications of the county and state bridge engineering codes for width, strength, and load-bearing capacity! So the city of San Diego sold it to Macco Construction

*After serving San Diego well for 35 years, the "Old Town" Bridge was dismantled . . . but not discarded. Within two months it became the two bridges you see above. (Bethlehem Steel fabricated and erected all the steel for all the bridges you see in these photos.)*



*One-quarter of the "Old Town" Bridge now crosses a creek bed in Foster Park, Ventura County, California.*

## one old one ... and save \$30,000!

Company, who dismantled the bridge and, in turn, sold it to the Bailey Bridge Equipment Company of San Luis Obispo. This company then sold the bridge to Ventura County highway authorities to build *two* urgently needed bridges.

### **They trucked bridge trusses 200 miles**

The 8 dismantled bridge trusses were trucked 200 miles northward. One truck was needed for each of the 18-ton, 104-foot-long trusses; two other trucks hauled the steel floor sections of the bridge.

### **The whole job took just 2 months**

In Ventura County, three spans of the old four-span bridge were erected to span Calleguas Creek. The fourth span was erected to span Coyote Creek. One bridge

was now two bridges! And the whole operation—from beginning of dismantling to finish of re-erection—had taken only two months!

### **SAVED \$30,000**

According to highway officials of Ventura County, the bridges are as good as new ones . . . and they cost \$30,000 less than the estimated cost of building new bridges.

### **What other bridge material is as adaptable as steel?**

You can *widen* a steel bridge—easily. You can *re-use* structural steel. And you can *scrap* structural steel and get something back on your original investment. Steel is the *adaptable* bridge material. Our nearest sales office will gladly tell you more.

*Look to the future  
...design with steel*



*for Strength  
... Economy  
... Versatility*

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA. Export Sales: Bethlehem Steel Export Corporation

# BETHLEHEM STEEL







125-cfm Gyro-Flo on a bridge repair job.

Why road repairs  
go faster when you

## DEPEND ON GYRO-FLO

With Gyro-Flo air power on the job, you can forget about costly interruptions from compressor down-time. For Gyro-Flo *dependability* is a matter of record — proved in 10 years of service on construction and maintenance jobs the world over. What's more, you get sustained high

fuel economy and low oil consumption too, year after year.

Gyro-Flo portables are available in sizes from 85 to 900 cfm, in wheeled, power-take-off or truck-mounted units for any type of job.

*The World's Most Comprehensive Compressor Experience*

**Ingersoll-Rand**  
294A2 11 Broadway, New York 4, N. Y.



... for more details circle 329 on enclosed return postal card

Special report to users of Caterpillar equipment:



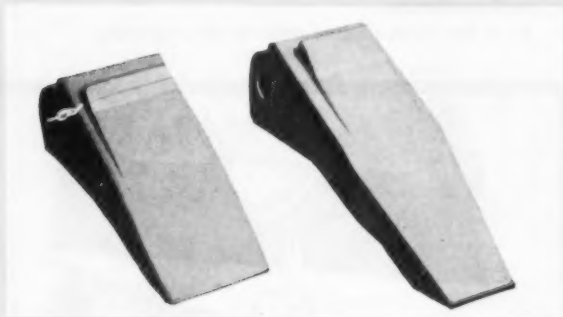
Parts you can trust  
...cost less per hour

## **New Cat No. 8 and No. 9 Ripper Tips** **outproduce other brands 25 to 50% in field tests**

That's the kind of news you can use—to cut costs. This newcomer to the Caterpillar line of ground-engaging tools is making a name for itself with cost-conscious users.

**They're exceptionally wear-resistant**—hardened to Rockwell C50 for longer wear-life under any conditions.

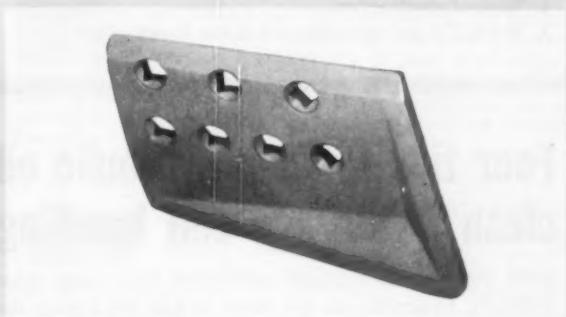
**Check the price!** Improved Cat Tips sell for about the same or even less than other leading brands.



**They're available in two new designs.** Both the short and long tips shown in the photograph are *self-sharpening* to keep their working edge until replacement. The long tip gives extra wear-life with only a slight reduction in impact strength. Low-cost, weld-on shank adapters are available for *all brands* of shanks. No need to wait—you can put these new Cat Tips on your job immediately.

**In field tests the short tip was pitted against two leading brands** on rippers working in caliche and cemented conglomerate beds. The Cat Tip outproduced the other brands 25-50%—representing savings of 38-54% in replacement costs.

**Outstanding impact strength!** One No. 9 Tip, tested in *solid granite*, took 13 smashing blows from another D9 pusher that backed up 10 feet before each charge at the stalled D9 Ripper.



**And here's another money-saving newcomer**—Cat's new No. 7, No. 8, No. 9 End Bits are redesigned for better digging ability. They self-sharpen as they wear away for continuing like-new performance. They're forged alloy steel and heat treated for outstanding strength and wear-resistance.

**Compare other ground-engaging tool brands** against the Caterpillar line. Keep machine-hour records and find out for yourself which is the best buy. Those who do, buy Caterpillar.

See your Caterpillar Dealer for the best in parts and service.

Caterpillar Tractor Co., General Offices, Peoria, Ill., U.S.A.

# **CATERPILLAR**

Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

Diesel Engines • Tractors • Motor Graders • Earthmoving Equipment  
... for more details circle 290 on enclosed return postal card

# LUBE LOGIC

## New tips for

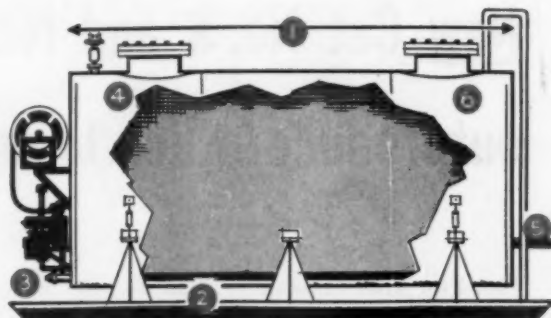
### Don't let storage tank contaminate gasoline

One of the basic essentials of good equipment performance is clean fuel; and the best way to make sure the fuel you use is as clean as the fuel you buy is to keep your own storage facilities up to snuff.

What does it take to make the ideal gasoline storage tank? Here are some of the specifics that Texaco engineers have found to be most important.

**The ideal gasoline storage tank has:**

1. Plenty of room. Every time you fill a tank you stir up the sediment at the bottom. The bigger the tank, the less it has to be refilled, and the longer the sediment stays settled on the bottom.
2. Welded construction.
3. A 1½" drain valve, located at the lowest point.



4. A large hand hole plate or manhole, to make cleaning easier.
5. A suction line to the gasoline pump located several inches above the tank bottom, to avoid drawing out the sediment and condensate.
6. A fine-mesh strainer over the filler opening.

### Four tips to keep hydraulic oil clean in storage and handling

Even the best maintenance techniques won't keep your hydraulic equipment on the move if you don't keep the oil clean while it's in storage and while it's being put into the machine. Here are four simple precautions that will assure you of getting nothing but clean, clear oil in the hydraulic system:



1. Store the drums on their sides, indoors if possible, but in any event under some sort of shelter.



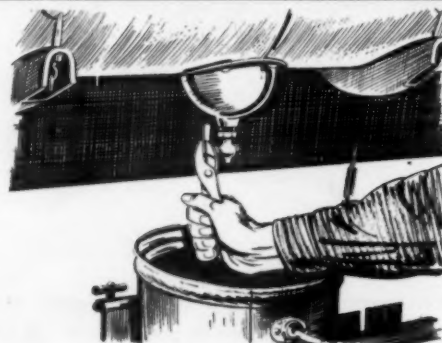
2. Before you open a drum, clean the top so that no dirt or water can fall into the oil.



3. Make sure that you use only *clean* hose and containers in transferring the oil from the drum to the equipment.



4. Filter the oil as it enters the reservoir on the machine. If the fill pipe on the equipment doesn't have a filter, use a funnel fitted with a 200-mesh screen.

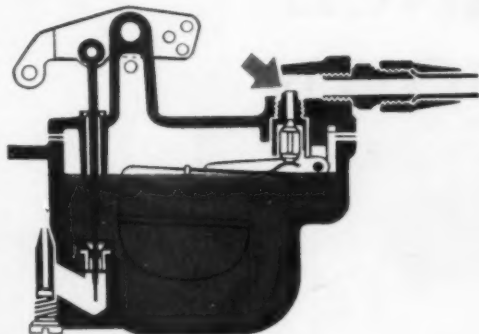


### Protect diesel fuel injector with periodic tank drains

Dirt and water in diesel fuel can ruin a fuel injector in no time. Even if you keep the fuel clean during storage, there's still a good chance that temperature changes will create enough condensation in the fuel tank on your rig to start rusting in the injectors. Several operators have pretty well solved this problem by partially draining the fuel tank once or twice a week. Simply draw off about a gallon of fluid through the drain valve at the bottom of the fuel tank. You lose some fuel this way, but you also get the accumulated water and other contaminants clear out of the fuel system. The cost of the fuel you drain off is a small loss compared to the repair bills you save on the fuel injectors.

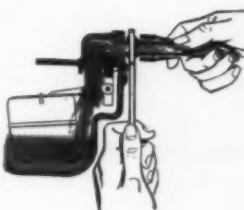
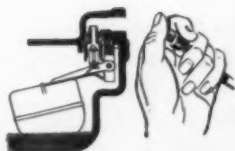


# more efficient maintenance



## Quick cure for carburetor flooding

Repeated stalling and hard restarting is often caused by a tiny particle of grit, which lodges under the carburetor float needle valve, lets too much gasoline into the carburetor and causes flooding. You can often solve the problem with the following routine: disconnect the fuel line at the carburetor and plug it with a cork, a pencil or anything else that will fit. Then run the engine until you've used up all the fuel in the carburetor. Reconnect the fuel line, crank the engine, and the rush of gasoline into the empty carburetor will often flush the foreign matter out of the needle valve seat. If you have a friend but no cork, have the friend start the engine while you plug the disconnected line with your thumb. Same difference.



## TEXACO PRESENTS THREE NEW FILMS TO HELP BOOST YOUR PROFITS



**1. PLAN FOR PROFIT**—Texaco's newest color-and-sound movie. Dramatizes the major savings you can make with the proper investment of less than 1% of your total budget—the amount you spend on lubricants. Film features latest lubrication methods and equipment on a number of contracting projects, demonstrating the Texaco Simplified Lubrication Plan in action.



**2. FUNDAMENTALS OF LUBRICATION**—a brand new Texaco color slide film. A clear, concise once-over that defines technical terms like "viscosity" and explains specifically what lubrication is and what it does. This down-to-earth discussion will give the lubrication man a new understanding of the importance of lubrication, and a fresh interest in his work. It's supplemented with a manual that covers the same ground in greater detail.



**3. LUBRICATION OF EARTHMOVING EQUIPMENT**—a new slide film, in color. A concise, easy-to-understand analysis of proper lubrication of engines, wheel bearings, steering, track rollers, crawler treads, hydraulic equipment, wire rope, open and enclosed gears. Supplemented with a manual that covers the whole field of earthmoving equipment lubrication in greater detail.

**FOR AN EARLY SHOWING** of any one of these films—or all of them—contact your Texaco Contractor Representative now.

## TEXACO LUBRICATION ENGINEERS

Every month or so we'll bring you a batch of "sleepers," little angles, so easy to overlook, where big savings in money and time can be made. If Lube Logic doesn't solve your problem, call your local Texaco Lubrication Engineer. Anytime, all the time, he's your best source of money-saving lubrication ideas. Don't forget that "Lubrication is a major factor in cost control." Texaco Inc., 135 East 42nd Street, New York 17, N. Y.

Tune In: Texaco Huntley-Brinkley Report, Mon. Through Fri.-NBC-TV

# TEXACO

Throughout the United States

Canada • Latin America • West Africa



# BIG PERFORMANCE... LOW MAINTENANCE WITH PINNED-DOWN STABILITY

Allis-Chalmers tractor loaders feature axles that are pin-connected to the frame with thick steel pins... not automotive-type U-bolt connections. Tractor loaders stay on the job... not in the shop.



Pinned-down stability—that's what you get in Allis-Chalmers tractor loaders. Axles on these units are pin-connected to the frame with thick steel pins... not lightweight U-bolt connections. There's no rolling or shifting under load... no grief with bolts working loose... or mounting plates warping out of shape.

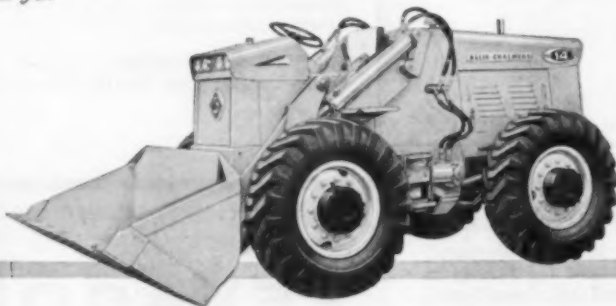
Pin-connected axles keep Allis-Chalmers loaders on the job... not in the shop. There's far less downtime due to annoying axle problems. You'll also profit from: *extra stability* from a longer wheelbase to length ratio; *single-lever control* of all speed and direction movements; *five-way hydraulic filtering* for safe, efficient operation; *well-located dump cylinders* that are up and away from dirt and *high lift—long reach* for fast, easy loading cycles.

See Allis-Chalmers loaders in action. Be convinced that these units can bring you extra earnings on all excavating and loading work. *Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.*

Allis-Chalmers offers 6 tractor loader models—ranging in power from 76.5 to 184 horsepower—in carry capacity from 3,600 to 10,500 lb and with buckets available from 1 to 6 cu. yd.

**STEP UP YOUR**

**P**erformance  
**O**perator comfort  
**P**owerability  
**O**use of maintenance  
**R**eliability



**WITH ALLIS-CHALMERS  
POWER FOR A GROWING WORLD**

... for more details circle 330 on enclosed return postal card







**"40,000  
cu. yds.  
loaded out  
in record time"**

... say field reports about these two BAY CITY shovels. Owned by K & R Construction Co. of Camillus, N. Y., they are loading bank run gravel for use as sub-base material on the Empire Stateway Interstate Route at Syracuse. Fourteen trucks are needed to keep up with the two machine's output of 2300 to 2500 cubic yards per 8-hr. day.

You can't help admiring a BAY CITY'S digging ability. Smooth, balanced power is provided through a fluid coupling and speed reducing unit of helical cut gears running in oil. A one-piece continuous chain with automatic adjuster gives positive, powerful and independent crowd action. Power-operated retract is twice as fast as crowd ... provides positive control of dipper handle throughout the dig-swing-dump cycle. Mechanical power-controlled boosters set the main



drum clutches with minimum effort. Smooth acting swingers are engaged through needle bearings on hardened tapered keys — a combination that means quick response, fast swing.

BAY CITY crawler machines are offered as  $\frac{3}{4}$ - to  $1\frac{1}{2}$ -yd. convertible excavators and as 20- to 30-ton erecting cranes. Truck-mounted CraneMobiles, with lifting capacities of 25- to 40-ton, are also available. Ask your local BAY CITY dealer to give you the complete story. Do it today!

**BAY CITY** **SHOVELS, INC.**  
2611-C Center Avenue  
BAY CITY, MICHIGAN

*a subsidiary of Unit Crane & Shovel Corp.*

... for more details circle 285 on enclosed return postal card

## ROADS AND STREETS

Sixty-Nine years of Editorial Leadership

# Washington News Letter

---

By Duane L. Cronk, Director, Highway Information Services

September 10, 1961

State highway construction contract awards jumped a long 28% during the fiscal year ending June 20, the BPR reported last month. The agency's report, which included all state department lettings, not just those under the federal-aid program, indicated that low bidders walked off with \$4.1 billion worth of work. This compares with \$3.2 billion the previous year.

Asphalt concrete pavement contractors and their allied interests are seeing first results of their \$1.3 million quality improvement research program. The National Bituminous Concrete Association reported last month that studies on the allowable moisture in hot-mix bituminous paving mixtures are already producing findings of value. First scholarships to be made under the research program were made last month, also, to research scholars at MIT and Ohio State.

Contractor members of NBCA may be interested in a kit of advertising materials the association has just developed to help them promote local business. The material may be obtained from NBCA at 1145 Nineteenth Street, N.W., Washington 6, D.C.

\* \* \*

The Administration's tax credit plan (designed to make it easier for businessmen to purchase equipment) doesn't stand much chance of passing Congress this session. Joseph King, Washington counsel for the Associated Equipment Distributors, reports the gathering rush to close up shop for the year probably will frustrate any more action this session.

President Kennedy had proposed an 8% tax credit on machinery to encourage long-range investment by manufacturers. Construction contractors would have been allowed the same incentive. Under the plan, contractors could deduct 8% of the cost of new equipment with a life of more than six years from their tax tab. The same allowance would be made for up to \$50,000 worth of used machinery. The tax loss, a reported \$1.1 billion, would be offset by closing some existing loopholes.

The federal government parcelled out another \$3.1 billion of federal-aid to state highway departments last month, to help the states advance road planning through fiscal 1963. The Interstate System will get \$2.4 billion, the ABC networks, \$700 million. (Although Congress approved \$925 million for the latter, 25% is being withheld temporarily for re-determination of post road mileage in each state, a factor in the distribution formula.)

A slightly increased federal-aid airport construction program appears likely to win approval by Congress this month. The House has drafted a scheme boosting federal funds from \$63 million a year for the next five years to \$75 million.

(continued on next page)

Local jurisdictions - state, county, and cities - would match the U.S. money 50-50. The Senate is expected to act momentarily.

Total airport construction around the nation has been running about \$250 million a year. Like the highway program, the federal-aid airport program has been beset with uncertainties. This five-year extension is expected to move it onto firmer ground.

Special to steel producers . . . The U.S. Bureau of Public Roads' new steel usage factor was released here last month. Its intention is to help you plan production for this construction market. The average factors for the period 1958-1959-1960 were: Structural steel - 185 tons per million dollars of contract construction cost; reinforcing steel - 190 tons; metal culvert pipe - 38 tons; and miscellaneous steel - 50 tons. The BPR report breaks down usage by states and systems, rural and urban, for each of these categories.

\* \* \*

The BPR's latest quarterly report on the National Highway Program reveals that as of June 30, five years after initiation of the multi-billion-dollar construction effort, the industry has completed more than 10,800 miles of the 41,000-mile Interstate System, (including 4,532 miles of toll roads and other segments completed prior to June 30, 1956). Construction is under way on another 4,847 miles, engineering and right of way acquisition on 10,052 miles.

The problems of county engineers drew top federal attention last month. A number of highway officials and industry representatives from Washington commended the county officials at their annual meeting for rapid progress in meeting highway needs, and promised them more consideration of local problems in Washington deliberations. It is becoming obvious to planners here that much of the so-called "urban problem" lies in the laps of county highway departments. As suburban developments continue to overflow into county jurisdictions, local officials are going to face more and more city-type street engineering problems, they predicted.

In a move to increase federal participation in this area, the BPR last month reactivated its Secondary Roads Division. Kenneth B. Foster, a 30-year veteran engineer in the Bureau, was appointed new chief of the department. The federal government apportions \$260 million a year for construction on this system, expects to increase it steadily.

\* \* \*

Also, last month . . .

Congress considered a bill to eliminate the office of Commissioner of public Roads. The post has been vacant since Ellis Armstrong resigned last January to become president of the Better Highways Information Foundation.

A new transportation consultant has been named to help formulate highway policy in the Department of Commerce. Dr. Gayton E. Germane, Stanford University professor, has previously served as director of transportation policy for the Department of Defense and also for the U.S. Steel Corporation.

Federal aid for mass transit was approved by a Congress which heard considerable support for such a program. The legislators OK'd establishment of a \$50 million "emergency" loan fund to assist mass transportation systems in urban areas and another \$25 million for development of "demonstration projects." Highway officials are freely predicting the pilot program will be greatly expanded, perhaps to the detriment of highway planning in some areas.





## MONO-ROTOR PROVEN...WARRANTY QUADRUPLD

The new line of Worthington Mono-Rotor compressors has gained extensive field experience with outstanding success. Performance has been so successful, in fact, that Worthington has lengthened its warranty period from 3 months to one year. It is the first major construction industry compressor manufacturer to do so.

Mono-Rotor units have proven themselves in widespread areas over the last 3 years. They are in locations ranging from New York City to Hawaii—from Alaska

to Argentina. Service conditions have ranged from the intermittent use in winter and summer to three-shift use for months at a time.

What makes the Mono-Rotor compressor so dependable? It is extreme simplicity.



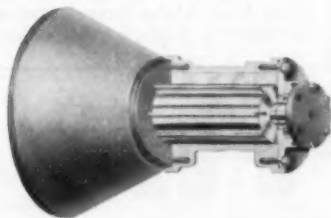
**NEW 125' MONO-ROTOR BLUE BRUTE**

It actually has 63% less parts than its two-stage predecessor. The Mono-Rotor has just one stage, one rotor, two bearings, no gears and no oil pump. No other compressor design is so simple.

The new Worthington Mono-Rotor compressors have other benefits, too. They

are 20% lighter in weight and are designed for improved towing and tracking. The 3rd wheel is standard equipment for easier handling on the job. It runs all day on a tank of fuel. There's an engine-saving clutch and many other features.

The Mono-Rotor can now be ordered in the 85', 125' and 250' sizes. See it . . . rent it . . . or buy it at your Worthington dealer listed in the Yellow Pages under "compressors". Or write Worthington Corporation, Dept. 60-39, Holyoke, Mass. In Canada, Worthington (Canada) Ltd., Brantford, Ontario.



**MONO-ROTOR: 1 STAGE...1 ROTOR...  
2 BEARINGS... NO GEARS...NO OIL PUMP**



PRODUCTS THAT WORK FOR YOUR PROFIT

. . . for more details circle 326 on enclosed return postal card

### THE HIGH COST OF MIXING WATER

Careful job-site control of mixing water is essential for getting the best results in all types of concrete construction. Too much mixing water is a danger recognized by most construction men, and unfortunately the real damage resulting from excess water often shows up too late to be remedied without extensive costs.

#### Examples of Delayed Damage From Too Much Mixing Water

1. **Cracks in foundations**—Foundation walls and floors crack excessively from high shrinkage and low tensile strength caused by excessive mixing water.

2. **Freeze-thaw damage in pavements**—Air is entrained in concrete to protect it from freezing and thawing damage. When the slump is greater than 5 inches, there is danger of the air content decreasing which reduces this important protection.

3. **Sand streaks in foundations**—excess water bleeds up the sides of forms, washing out the cement paste, and leaving a streaked, raw, unattractive wall surface.

4. **Dusting floors**—as concrete bleeds, water comes to the surface. If there is excessive bleeding, the water brings aggregate fines to the surface which often cause dusting and crazing.

5. **Leaky walls and wet floors**—Both can result from excessive voids in concrete caused by too much water.

#### The Water/Cash Ratio

Much has been said and written on the subject of controlling the amount of mixing water, here it is expressed in terms everyone understands: money. To change a typical mix from a 2-inch slump to a 9-inch slump by adding water costs as much as \$7.50 per 5-yard load if the strength is maintained. Here's why:

**1-In. Gravel Mix, W/C = 6 Gal./Bg. (4000 psi)**

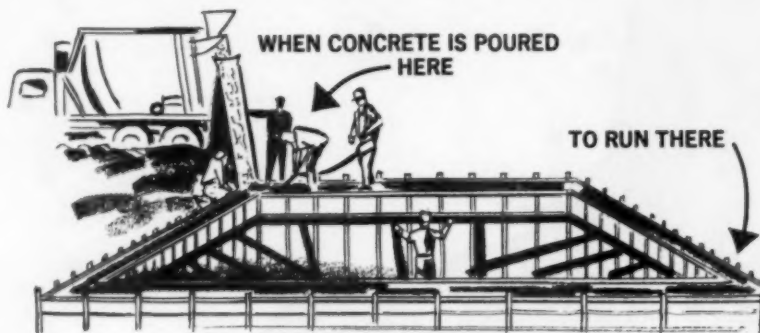
Total water used for 2-in. slump: 30 gal.  
Total water used for 9-in. slump: 39 gal.  
39 gal. - 30 gal. = 9 gal. excess water added

**Required Cement for 6 Gal. W/C Ratio**

2-in. slump,  $30 \div 6 = 5$  bags of cement needed

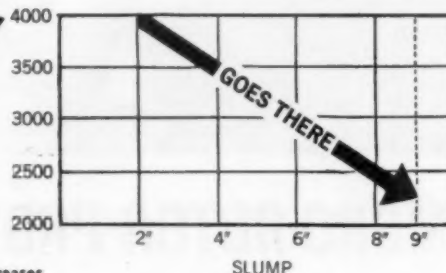
9-in. slump,  $39 \div 6 = 6\frac{1}{2}$  bags of cement needed

... for more details circle 277 on enclosed return postal card



THE STRENGTH  
HERE

STRENGTH  
PSI



As the slump increases, strength decreases.

$6\frac{1}{2}$  bags - 5 bags =  $1\frac{1}{2}$  bags additional cement needed to maintain the 4000 psi strength

**Extra Cost of 9-In. Slump Per Yd., 4000 psi Concrete**

Extra cement costs

Approx. \$1.50 per yard

In other words, the extra water costs

\$7.50 per 5-yard load

or ..... \$ .17 per gallon (figures are approximated)

The cost of mixing water should never be underestimated. Repairs to the structure and damage to the contractor's reputation can be far-reaching and costly . . . it's at this point where the water/cash ratio comes into being—is most easily recognized.

#### Concrete Has a Bright Future

Concrete is one of the most flexible and widely used of all construction materials. Based on recent advances and the growing trend in design and construction, concrete will continue to grow in favor among engineers, architects and customers. This is why Alpha is promoting these helpful tips on concreting as a continuing program to help improve concreting practices.

Reprints of this information are available free of charge. Contact your local Alpha Representative or write to Alpha's home office.

# ALPHA

PORTLAND CEMENT COMPANY

Alpha Building, Easton, Pa.

## People



THE NEW PRESIDENT of the Tennessee Road Builders Association, James H. Burns, is shown going over some project details with the Association's executive secretary, Leslie T. Hart. Mr. Burns is president of Burns & Baker, Inc., of Nashville a leading Tennessee highway building firm. Other 1961 officers of the Association: A. B. Long, Jr., of Knoxville (first vice president), L. R. Taylor, Johnson City, and W. R. Caeter, Fayetteville (vice presidents).

JOSEPH E. McCracken, nationally known for many years as a representative of Bethlehem Steel Company for the highway industry, has become a special highway engineering representative for Gannet, Fleming, Carodry and Carpenter, Inc., engineers in Harrisburg, Pennsylvania. McCracken is a life member and a former vice president of the American Road Builders Association.

THE J. A. JONES CONSTRUCTION COMPANY, of Charlotte, N. C., has purchased Chas. H. Tompkins Co., Washington, D. C. The companies had been associated on large projects for many years. The latter firm will be a division serving as the Washington Office of J. A. Jones under J. Slater Davidson, Jr., vice-president. Edwin L. Jones is chairman and Edwin L. Jones, Jr., president of both the Tompkins division and the parent firm.

*Continued on page 26*

# THE BIG BITE



# The OWEN

## BUCKET COMPANY

BREAKWATER AVENUE • CLEVELAND 2, OHIO

BRANCH OFFICES: New York • Philadelphia • Chicago • Berkeley, California • Fort Lauderdale, Florida

... for more details circle 318 on enclosed return postal card

Hook an OWEN Clamshell Bucket to your crane and you're sure of superior performance and longer life. For OWEN Buckets have exclusive super-efficiency and long-lived features you won't find in ordinary clamshells.

For instance:

- Block and tackle type reeving
- One-piece head construction
- Recessed lips
- Single main shaft
- Riveted bowl assembly

For over half a century OWEN has been building clamshell buckets—tailored to meet the requirements of "men who move the earth the world over".

So team your crane to the bucket with the BIG BITE that's JUST RIGHT for every job!

Write today  
for the money-saving  
facts and figures.



# **EUCLID**

# **C-6.**



The Euclid C-6 Crawler is your best tractor buy  
for lowest operating costs...for work-ability...  
and for reliability in heavy service.

# .with new Hydraulic Dozers

## *now even more work-ability!*

With Torqmatic Drive and full-power shift, the "Euc" C-6 provides fast-as-a-fox maneuverability ... changes direction, from forward to reverse and back again with just a flick of the wrist. That kind of performance calls for fast blade action so the full work capacity of the C-6 can be utilized. Conventional tractor hydraulic systems didn't measure up ... in blade speed, low maintenance cost and freedom from excessive downtime resulting from wear and heat build-up.

Euclid and Gar Wood engineers combined their years of hydraulic experience with construction equipment and have developed a system that puts the C-6 even further ahead of other dozers in the same class. Incorporating a variable volume pump and single hydraulic cylinder, the C-6 with hydraulic blade provides important advantages in operation and maintenance ... advantages that are further proof of the C-6 being the lowest cost tractor in the 200 h.p. class, and most versatile by far!

### COMPARE THESE FEATURES OF A "EUC" C-6 HYDRAULIC DOZER WITH YOUR PRESENT EQUIPMENT!

- ▲ **Fast blade speed—up or down ...**  
almost twice as fast as competitive units
- ▲ **More horsepower for tractive effort ...** operator "meters" pump volume—no wasted engine power because no oil is pumped in "hold" position.
- ▲ **Better visibility ...** blade corners not hidden by hydraulic cylinder or "A" frame
- ▲ **Greater lifting capacity ...** improved mechanical advantage of single lever arm—blade mounting closer to center of front track roller
- ▲ **Less downtime ...** only one cylinder—no high pressure on drive shaft seal—heat problem eliminated—pump works only when pressure is needed for raising or lowering blade



# EUCLID

DIVISION OF GENERAL MOTORS, HUDSON, OHIO  
Plants at Cleveland and Hudson, Ohio and Lanarkshire, Scotland



P. L. Blackwell

PERCY L. BLACKWELL has been named by the Bureau of Public Roads as the chief of the Nuclear Energy Branch. He succeeds J. Clarke Williams who has retired.

Blackwell has over 30 years of highway engineering experience with the Massachusetts Department of Public Works, U.S. Corps of Engineers, and the Bureau of Public

Roads - nationally and overseas. In addition, Blackwell was employed as manager of the road machinery division of the Jaeger Machine Company, Columbus, Ohio.

L. W. KERN, of H. K. Campbell Sons, Corp., of Townsend, Md., has been elected president of the Maryland Highway Contractors Association for 1961. Vice president is Isadore M. Gudelsky, of Contee Sand and Gravel Company, Laurel, Md. William E. Hardy continues as executive secretary.

M. NICHOLAS SINACORI has been appointed district engineer, New York department of public works, Poughkeepsie. He moves up from assistant district engineer, succeeding Kurt E. Rauer who is retiring after more than 50 years with the department.

J. J. CORBETT succeeded Rex Whitton as Chief Engineer of the Missouri State Highway Commission. Whitton took over in January as Federal Highway Administrator in Washington, following forty years with the Missouri organization.

Corbett who has been with his department for 38 years has been assistant chief engineer since 1956.

HAROLD G. LEWIS, president of Flint Steel Corporation, Tulsa, Oklahoma, has been elected president of the American Institute of Steel Construction. He succeeds James M. Straub who died recently. AISC is a national organization representing over 300 companies in the fabricated structural steel industry.

JOHN H. WICKMAN, JR., has been named executive director of the Association of Professional Photogrammetrists, a national organization of companies engaged in photogrammetric engineering. He succeeds Colonel John G. Ladd, who retired recently.

Also elected chairman of the Association's executive committee is Marshall S. Wright, Jr., manager of the Washington, D.C., office of Lockwood, Kessler & Bartlett, consulting engineers.

COLONEL JOHN T. O'NEILL, Engineer, Fifth U.S. Army, who retired April 28 after 30 years of service in the Army National Guard and Regular Army, will serve as a consulting engineer to the Triborough Bridge and Tunnel Authority in New York City. Col. O'Neill's 1110th Engineer Combat Group helped build bridges in France and Germany under enemy fire.

JOHN PIERSON, president of Pierson Contracting Co., Saginaw, has been elected president of the Michigan Road Builders' Association.

*this is Hanson!*

The Hanson mechanical materials handling crane is a rugged, maneuverable rig that is saving time and reducing materials handling and labor costs for thousands of contractors and industrial plant engineers.

To see how a Hanson 3 or 5 ton mechanical, or a 6 ton hydraulic crane can meet your specific needs, call your Hanson dealer or write to Hanson Machinery Co., Tiffin, Ohio.

# HANSON

Builders of some of the country's finest shovels and cranes of the smaller capacities.

**MATERIALS HANDLING CRANES** Mechanical and hydraulic. 3, 5 and 6 ton.

**EXCAVATORS** Crawler, rubber and truck mounted:  $\frac{3}{4}$  to 1 yard shovels; 5 to 25 ton cranes.

Dealerships in some areas still open.

**HANSON MACHINERY CO.**  
TIFFIN, OHIO

... for more details circle 301 on enclosed return postal card

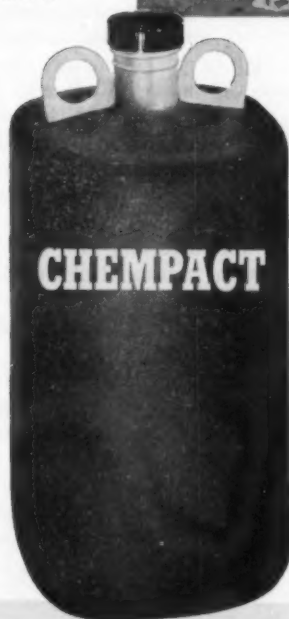




# SLASH WET WEATHER DOWN TIME



ANOTHER  
**REYNOLDS**  
FORMULA



## NOW YOU CAN MEET DEADLINES IN SPITE OF RAIN AND MUD

Chempack, the Chemical aid to soil control, stabilizes haul roads and right of ways so that normal traffic can be maintained in wet weather. Application of Chempack also results in higher levels of compaction for all highway subgrades.

Merely add one gallon of Chempack per 1,000 gallons of water as sprinkler tank is being filled. No agitation is required. (One gallon of Chempack treats 5 to 10,000 square feet, depending on soil conditions.)

**FOR FURTHER INFORMATION, CONTACT**

## THE CENTRAL-REYNOLDS COMPANY

CHEMPACT DIVISION

P. O. BOX 1203

FRESNO, CALIFORNIA

PHONE ADAMS 7-1249

## New Publications

### Manual on Uniform Traffic Control Devices

The U.S. Bureau of Public Roads has published the newly revised Manual on Uniform Traffic Control for Streets and Highways. The new standards, updated from 1948, were drafted by the National Joint Committee on Uniform Traffic Control Devices, and approved by the Committee's member organizations, the American Association of State Highway Officials, the Institute of Traffic Engineers, the National Committee on Uniform Traffic Laws and Ordinances, the American Municipal Association, and the National Association of County Officials. The latter two organizations joined the National Joint Committee during the past year and are expected to impart added impetus to the modernization of traffic control devices throughout the nation.

The Bureau of Public Roads actively assisted the National Joint

Committee in its work, and has a responsible interest in seeing that the results are broadly applied. By existing Federal highway legislation the signs, signals, and markings installed on highways constructed with Federal-aid funds are subject to approval by the state highway department with concurrence of the Federal Highway Administrator, who is directed to concur only in installations that promote safe, efficient highway use.

This new edition is expected to lend valuable service toward the safe and efficient use of the new highways being constructed in the Federal-aid program, as well as of the older streets and highways.

First published in 1935, and periodically reviewed and revised, the Manual reflects widely accepted and time-tested traffic control practices in design and application of control devices, as well as extensive research into the principles of safe and orderly movement of vehicles and pedestrians. The newest

edition includes, for the first time, specific standards for expressway signing, a major section on signing and marking for construction and maintenance operations, and a brief treatment of civil defense signing.

A significant feature of the new Manual is its elimination of certain alternatives in traffic control devices that previously were permitted, and the substitutions of a single standard. A notable example of this is the stripe to mark no-passing zones. In the future, according to the Manual, all such zones are to be marked with a yellow line to the right of the center stripe.

The Manual on Uniform Traffic Control Devices for Streets and Highways may be purchased from the Superintendent of Documents, U.S. Government Printing Office, Washington 25, D. C., at \$2 per copy.


### 1961 ARBA Directory

Names and addresses of more than 2,000 key administrative engineers and officials in the 50 state highway departments, the District of Columbia and Puerto Rico are listed in the 1961 edition of the convenient, pocket-sized directory, "Highway Officials and Engineers", published by the American Road Builders' Association.

The directory also lists administrative personnel of the Bureau of Public Roads including regional and division offices, engineers and administrative personnel of toll road authorities, and officers and directors of ARBA, its eight organized divisions, and its Washington headquarters staff.

Published annually by ARBA since 1945, the directory may be obtained for \$1 per copy from American Road Builders' Association, World Center Building, Washington 6, D.C.


**FREeway OPERATIONS.** Institute of Traffic Engineers, 2029 K St.,  
Continued on page 32



**The word is new! The letter is E!**

**The product is Childers New E Model Circulating Hot Oil Heaters**

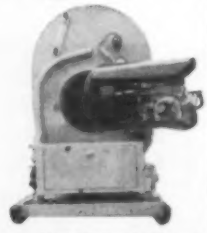
**New Compact Design**  
**New Burner Position**  
**New Control System**  
**New and Smaller Control Panel**  
**Childers well-known Reliability and Backup**



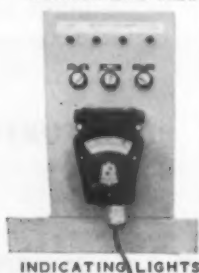
**FOR ASPHALT HOT MIX PLANTS & RELATED STORAGE HEATING • BULK ASPHALT & ROAD OIL HEATING • INDUSTRIAL PROCESS HEATING**

**WIDE RANGE OF OUTPUT CAPACITIES AND MOUNTINGS AND ALL-IN-ONE COMBINATION HEATER & STORAGE TANK UNITS**

**WRITE OR WIRE CHILDERS FOR FURTHER INFORMATION.**



**BURNER END VIEW**



**INDICATING LIGHTS**



**CHILDERS**

MANUFACTURING COMPANY, INC.

• FACTORY AND MAIN PLANT  
P. O. BOX 6185 STATION B  
ALBUQUERQUE, NEW MEXICO

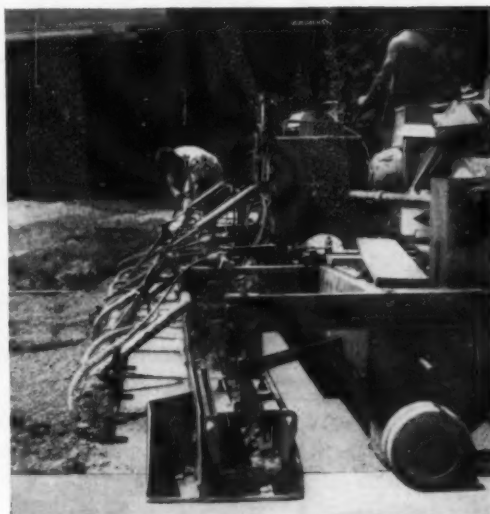
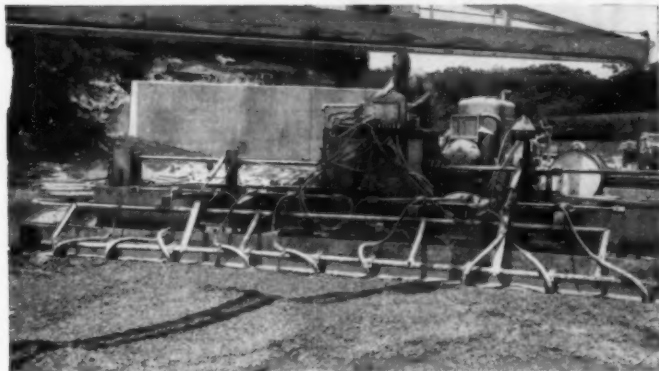
• EASTERN DIVISION  
P. O. BOX 4587  
RICHMOND 29, VIRGINIA

... for more details circle 287 on enclosed return postal card

**ONLY MAGINNISS FULL SLAB**

# VIBRATOR

## ATTACHMENTS



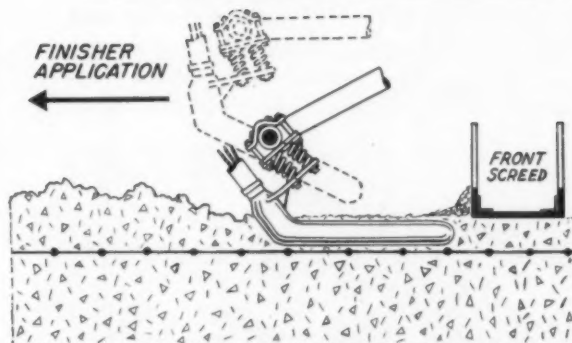
**give you these**

## Plus BENEFITS

- ★ MAGINNISS Hi-lectric motor-in-head design Vibrator allows cooling of motor by surrounding concrete.
- ★ Induction type motor gives constant speed under load. No brushes or commutator; spark-free — It is simple to maintain.
- ★ Motor drives eccentric direct — No flexible shaft.
- ★ Spacing, angle, depth and frequency are completely adjustable by the prime machine operator — to meet any and all job conditions.
- ★ The unit mounts easily on any spreader, finisher, combination spreader-finisher or slipform paver, without changing its balance or movability.
- ★ The generator is smaller in size and weight than that required to operate series-motor vibrators. It takes up less room on the machine.

### WHERE TO USE IT:

- City Concrete Paving • Airport Runway Paving •
- State Highway Paving • Canal Spillways •
- Highway Widening •



Quickly mounted on any finisher or spreader. No auxiliary carriage required. All attachment parts are furnished complete.

**WRITE FOR COMPLETE INFORMATION**—or call your nearest MAGINNISS Distributor. He's listed under "Contractors Equipment" in 85 principal cities.



**MAGINNISS**

**Power Tool Company**  
154 Distl Avenue, Mansfield, Ohio



... for more details circle 315 on enclosed return postal card

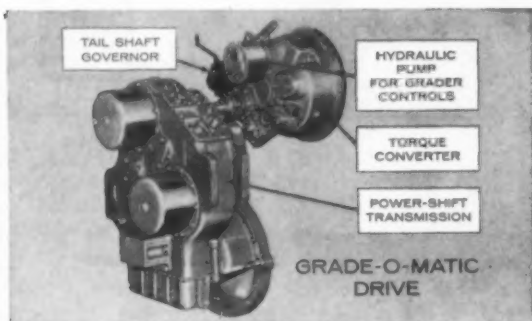


# You're miles ahead in performance with GALION GRADERS on the job. They're built to put more **WORKPOWER** at the blade

**HUSKIEST GRADERS BUILT.** You get strength to spare from Galion's extra-rugged frame. It's engineered for low-maintenance operation . . . for extra years of cost-cutting performance.

**MORE "PUSH-POWER."** Full working capacity results from the careful weight-to-horsepower balance built into Galion graders. You get more "push-power" at the blade. That's where power counts most.

**EXCLUSIVE GALION DESIGN** teams up with heavy-duty engine, rugged transmission, power-booster steering and centralized controls to speed operation. Result is a bigger day's work with less fatigue.



**GRADE-O-MATIC DRIVE—THE ULTIMATE** in efficient grader operation. It combines torque converter drive, power-shift transmission and tail-shaft governor to provide fully automatic power application.

**TORQUE IS MULTIPLIED** automatically. Meets varying power needs without constant shifting. Grade-O-Matic operators are free to concentrate on more efficient blade work on every job.



For information on graders from 58 to 220 hp., and weighing up to 42,000 lbs., contact your Galion distributor or write for latest catalog data. The Galion Iron Works & Mfg. Company, Galion, Ohio, U.S.A.

THE GALION IRON WORKS & MFG. COMPANY, GALION, OHIO, U.S.A.



. . . for more details circle 297 on enclosed return postal card

General and Export Offices, Galion, Ohio, U.S.A.—Cable Address, GALIONIRON, Galion, Ohio



**GALION®**  
ROLLERS AND GRADERS

**MILES  
AHEAD**

## New Publications

Continued from page 28

N. W., Washington 6, D. C.; 88 pages. Price \$1.00. Reduced rate for quantity purchases. This publication is a report on the 12 seminars conducted in 1958 and 1959 by the Institute of Traffic Engineers in all parts of the country on the subject of freeway operations. The book follows the general pattern of the seminars and discusses problems under 13 pertinent subjects. Recommendations which evolved from the discussions are presented. Where controversial subjects arose, both sides of the argument are presented.

"THIS IS A.D.S." is the title of a new manual which has just been released by the Association of Diesel Specialists. The new directory reflects the fast growth of the Association and is a "living testimonial to the fast expansion of the diesel service and fuel injection field."

Included in the directory is a foreword by the association's president, S. E. Frandlin, a history of the Association,

a pictorial review of officers and directors, and a complete listing of all the standing committees. Space has been devoted to the Association's Repair Standards program which was unanimously hailed in the industry as a great step toward better understanding of the types of services rendered by the A. D. S. service shops.

One free extra copy can be obtained by writing to the A. D. S. headquarters - The Association of Diesel Specialists, 633 East 63rd Street, Kansas City 10, Missouri. Bulk copies can be obtained at the cost of \$1.00 per copy by simply attaching check with order.

**CERTAIN ECONOMIC EFFECTS OF THE LEXINGTON NORTHERN BELT LINE.** Bureau of Business Research, College of Commerce, University of Kentucky, Lexington.

The effects on urban and industrial development of the town of Lexington, due to a bypass built as a temporary measure, are outlined

in this publication. The Lexington Northern Belt Line 6.2 mile bypass was planned as a limited access facility in 1947. Since 1952 more than 70 companies have located commercial or industrial establishments in close proximity to the belt line.

**NATIONAL HIGHWAY WEEK.** An attractively illustrated booklet giving bird's-eye picture of the activities and accomplishments of this nation-wide public relations effort in behalf of the highway program.

A free copy available from Better Highway's Information Foundation, 2000 "K" Street, N. W., Washington 6, D. D.

**HIGHWAY ECONOMIC IMPACT DATA.** Important new facts issued by the Massachusetts Department of Public Works, 100 Nashua St., Boston, Mass. The data are contained in two reports, one on suggested study areas, the other a review of studies made and bibliography on this subject.

## TEST QUICKLY IN FIELD OR LABORATORY

Handy pocket instruments for Engineers, Architects and Contractors for quick material classifications and specification check tests.

**CT-158 Concrete Air Indicator** for checking entrained air content of fresh concrete. \$10.00\*

**CT-421 Concrete Mortar Penetrometer** for determining "initial set" beyond which concrete can no longer be worked or vibrated. \$22.50\*

**CL-700 Pocket Penetrometer** for rapid strength classification and checking degree of compaction of cohesive soils. \$15.00\*

\*F.O.B. CHICAGO . . . IMMEDIATE DELIVERY

**SOILTEST**  
Incorporated

4711 W. NORTH AVENUE • CHICAGO 39, ILLINOIS • U.S.A.

. . . for more details circle 319 on enclosed return postal card



# NEW



**IDEAL FOR SMALL INSTALLATIONS AND MAINTENANCE JOBS**



## **ALLIED JET SEAL PRODUCT 9020**

Now! Allied Jet Seal—the original two-component, polysulfide polymer, elastomeric joint sealing compound—introduces Allied Jet Seal Product 9020.

Hand-mixed and hand-applied, Jet Seal 9020 is ideal for small installations on bridges and for maintenance work.

Jet Seal 9020 contains ALL the physical properties and advantages of Allied Jet Seal 9015H—specified by highway engineers the nation over as the *preferred* joint sealant . . . **Allied Jet Seal 9020** has no flow even at elevated temperatures (200°F.).

**Allied Jet Seal 9020** will prevent penetration of water into joints.

**Allied Jet Seal 9020** is highly resistant to highway salts.

**Allied Jet Seal 9020** will prevent incorporation of incompressible materials.

**Allied Jet Seal 9020** has positive adhesion, cohesion, resilience, and ductility at low temperatures (—20°F.).

**Allied Jet Seal 9020** is quick curing. Construction can be opened to all traffic within four hours.

The work-life of Jet Seal 9020 is one hour. Tack-free time is four hours. The material is conveniently packaged in five and one-gallon units, with complete instructions for efficient mixing and application.

Write today for more information on the newest time, work and money-saver in the sealant field . . . Allied JET SEAL Product 9020.

**ALLIED**

**MATERIALS CORPORATION**

Producers, Refiners and Compounders of Special Asphalt and Coal Tar Products

Allied Building • 5101 N. Pennsylvania • P. O. Box 7278-39th Street Station • Oklahoma City, Okla.

PLANTS: Stroud, Okla. Detroit, Mich. Los Angeles, Calif.

... for more details circle 280 on enclosed return postal card

# Keep Road Program Unsnarled —ARBA Board Concern

**C**oncern about the highway program's administrative problems—problems which tend to delay construction and increase its costs—set the tone for the semi-annual meeting of the Board of Directors of the American Road Builders' Association held in Washington on July 21.

Directors were gratified with the 1961 Highway Act, but some expressed the feeling that much remains to be done to assure a stable, long-range program.

Special interest was shown in the report on the AASHTO-ARBA Joint Committee, active on administrative matters. C. D. Curtiss, special assistant to ARBA's executive vice president, reported that three subcommittees have completed work, with their recommendations accepted by the AASHTO Executive Committee. The three are the Sub-

committees on Structural Supports for Highway Signs, Compaction of Earthwork, and Mixing Times for Portland Cement and Bituminous Concrete. Three subcommittees will deal with equipment and the appraisal of new highway materials. Another subcommittee which was activated earlier and is continuing its work is the Subcommittee on Standard Short-Span Bridges.

Recommendations for the San Francisco Convention, to be held in March, 1962, were submitted to the Board of Directors by the Convention Advisory Committee, headed by E. S. Preston, Ohio Director of Highways. The Advisory Committee urged that Modernization of the Highway Industry be the general convention theme, with the program set up to cover all phases of construction and administration. The Committee recommended as a

special panel topic the criticisms of the highway program stemming from the Blatnik Committee and other sources and the repercussions therefrom.

Concern was also evidenced in the legislative report by Deputy Executive Vice President Burton F. Miller, who warned that serious legislative problems loom ahead. Mr. Miller stressed the point that many Congressmen are insisting that the Federal-aid airport program be subjected to annual review by the Appropriations Committees, and that this point of view not only jeopardizes the airport program but also presents a means of attacking the highway program.

In addition to laying plans for the 1962 San Francisco Convention, the Board also approved a recommendation that the 1967 Convention be held at Miami Beach, Fla. Other Convention sites, previously selected, are 1963 Chicago (Road Show); 1964 in New Orleans, 1965 in Washington, 1966 in Denver.

Other action by the Board included:

Approval of a ten-year extension of the affiliation of the Construction Industry Manufacturers Association as ARBA's Manufacturers Division.

Approval of a proposal that ARBA assume responsibility for a share in the fiscal 1962 fund-raising program for the Better Highways Information Foundation. Similar action had previously been taken by the governing bodies of CIMA, the Associated General Contractors, and the Associated Equipment Distributors.

Agreement that ARBA should defer action leading toward the acquisition of real estate at this time. Executive Vice President L. W. Prentiss presented an ARBA headquarters Building Fund report showing pledges totaling \$34,000, and reported that he is keeping in close touch with the real estate market in Washington, but recommended no commitments.



## TRUCO® DOES IT AGAIN!

80% cost reduction in airport runway lighting by installation of pancake lights



Above: Drilling holes for light units.  
Left: Cutting slot raceways for wiring.

Truco "pancake" diamond drill on Truco Model G, gasoline powered, truck-mounted drill rig cut holes for light units 6" dia. x 1" deep. Truco Concrete Saw with 14" Truco diamond blades sawed miles of slots for wiring raceways in both bituminous and portland cement concrete runways. Even greater savings now possible using new Tru-Vac® Vacuum Pad to anchor drill rig in seconds. Write for our new Catalog.



**MASONRY DRILLING DIVISION**  
**WHEEL TRUEING TOOL COMPANY**

176-3200 W. Davison, Detroit 38, Mich. • 575 Langlois, Windsor, Ont.

... for more details circle 325 on enclosed return postal card

# Can your loader handle these six jobs?...



**Grade with motor grader accuracy** using the 4-in-1's "carry-type scraper" action—as this owner is doing, fine-grading a parking area to exact specifications. Operation "boils in" excess dirt, for easy removal.



**Exclusive 4-in-1 clam action** lets you grab, lift, and load heavy, unwieldy objects like stumps, boulders, and concrete slabs—without any need of hand work. You clam-on, lift, and release the load, hydraulically.



**Simply open the clam, set "blade" segment to cut**—and the 4-in-1 doubles for a full-sized dozer in capacity, working range, and control accuracy. Only "hand work" to do is move the hydraulic control lever.

## SURE, if it's a Clam Action 4-in-1!



**Clam-handle sticky materials** with the 4-in-1—even in conditions that clog old-type buckets. Exclusive 4-in-1 bottom-dumping uses the gravity pull and clam "pull apart" action for positive self-cleanout!



**Only clam-action 4-in-1's** provide back-drag action—speeding masonry wall demolition here—also widely used for bank-grading, ditch-cleaning, and pulling down materials, quickly and efficiently.



**Place the open clamshell** over builder's scrap, rubble, isolated piles of loose materials—close the clam to fill the bucket, instantly, without "chasing" the material. And without any hand work, whatever!

**Why limit the variety** of jobs and conditions you can handle? Why limit your income to what an old-style "single-action" loader can earn you? Why be satisfied with anything less than 4-in-1 "equipment spread" utility—that multiplies profit-making capacity? Get positive proof! Let your International Drott Distributor demonstrate the 4-in-1 size you need! Five sizes available from  $\frac{3}{4}$  to 3 cubic yards.



International Harvester Company, Chicago 1, Illinois  
Drott Manufacturing Corp., Milwaukee 15, Wisconsin

**INTERNATIONAL**  
**DROTT**

... for more details circle 303 on enclosed return postal card



## Road Show Committee Roster is Completed

The Board of Directors of the Construction Industry Manufacturers Association (CIMA) has rounded out final committee appointments for the 1963 Construction Equipment Exposition and Road Show. Three committees have been added: Housing, Rules and Qualifications, and Space Allocation. The Board previously announced the Administrative Committee and the Publicity and Public Relations Committee.

J. E. Mitchell is chairman of the Housing Committee. He is division manager, manufacturer sales, The Firestone Tire & Rubber Company. Members are R. G. Greer, International Harvester Co.; William D. Lease, Athey Products Corp.; D. A. Milligan, J. I. Case Company; and Gordon K. Ray, Portland Cement Association (representing Materials & Services Division of ARBA).

Chairman of the Rules and Qualifications Committee is Buel M. Wallis, who is vice president, director of marketing, Schield Bantam Company. He will be assisted by E. J.

Mercer (vice-chairman), of Allis-Chalmers Mfg. Company; Brooks M. Dyer, Pittsburgh Plate Glass Company (representing M&SD); Edward H. Holt, Barber-Greene Company; and Robert E. Hunter, Detroit Diesel Engine Division, GM.

A. J. Lichtinger, executive vice-president, The Wellman Engineering Company, is chairman of the Space Allocation Committee. His committee comprises George C. Williams (vice-chairman), of Northwest Engineering Company; S. J. Duncan, International Salt Company for M&SD; George B. Flanigan, Chain Belt Company; Kenneth P. Kerr, Butler Bin Company; and E. C. Chapman, Caterpillar Tractor Co.

"These committees provide an extremely able and experienced organization for the promotion of this great Exposition," said a CIMA spokesman. The Construction Equipment Exposition and Road Show is to be produced and managed by the Construction Industry Manufacturers Association and is sponsored by the American Road Builders Association, the Associated

General Contractors of America, the International Road Federation and the Associated Equipment Distributors. It is to be the world's largest industrial exhibit and will be held in the International Amphitheatre, Chicago, starting February 23, 1963.

TWO NEW STANDARD STEEL specifications have been released by the American Institute of Steel Construction, national association representing the fabricated structural steel industry.

The Specification and Loading Tables for Open Web Steel Joists (Longspan or L-Series) has also been adopted by the Steel Joint Institute and supersedes the earlier AISC-SJI jointly-adopted specification which has appeared in the AISC Manual of STEEL CONSTRUCTION since 1955. The Specification for Architecturally Exposed Structural Steel is a completely new standard.

Copies of the two Specifications are available free of charge from AISC, 101 Park Avenue, New York 17, N. Y. or any AISC office.



# STRENGTH

With offices networking the nation and assets of over half a billion dollars, The Fund can assure that bulwark of security so necessary for your construction operations. The Fund's policies are geared to meet all your insurance needs, including Contract Bonds, Workmen's Compensation, Public Liability, Crime and Builder's Risk coverages. By servicing the total account, The Fund can often save you money, lower your bid and help you acquire new jobs. Ask your insurance agent or broker to insure you through The Fund of Experience.


CENTRAL BONDING OFFICES:  
3333 CALIFORNIA STREET, SAN FRANCISCO  
110 WILLIAM STREET, NEW YORK  
Branch Offices in Principal Cities in America




*The*  
**FUND**  
Insurance Companies

FIREMAN'S FUND INSURANCE COMPANY  
HOME FIRE & MARINE INSURANCE COMPANY  
NATIONAL SURETY CORPORATION

... for more details circle 295 on enclosed return postal card



With a pedigree reaching  
back over 60 years, the famous  
Mack Bulldog is today the  
recognized symbol of leadership  
in the heavy-duty truck field.



**What's  
behind  
the  
Bulldog  
?**

# BALANCED



## Balanced Design assures you Unmatched Performance.

The Mack concept of **BALANCED DESIGN** means Mack-engineered and Mack-built components which work together with maximum efficiency—not just when new, but after hundreds of thousands of miles of profitable operation. Only Mack offers trucks and tractors with true **BALANCED DESIGN** because only Mack makes all its own major components . . . makes them to standards of

efficiency, ruggedness and precision accomplished nowhere else in the industry. **MACK BALANCED DESIGN** results in vehicles whose engines, clutches, transmissions, carriers, axles and suspensions work in close harmony. No trucks assembled with purchased components can achieve the uncommonly smooth, powerful, responsive and economical performance built into each Mack.



# DESIGN



## Balanced Design assures you Undivided Responsibility.

The manufacturing concept which enables Mack to build **BALANCED DESIGN** into its vehicles also enables Mack to assume full responsibility for every truck or tractor bearing the famous Mack bulldog. You get this Undivided Responsibility because Mack alone insists on building its own major components. Competitive manufacturers without exception, buy many, if not all, of their components from outside vendors. Who guaran-

tees these components? Who provides adequate service on them? Sometimes the truck manufacturer . . . sometimes the component manufacturer. Too often this means split responsibility and costly downtime.

There's none of this when you buy a Mack. Because Mack insists on building its major components, Mack assumes Undivided Responsibility for the entire vehicle. We build it . . . and we stand behind it 100%.

What's  
behind  
the  
Bulldog

?

# MACK-BUILT

...for your  
specific job



## Mack B-40 and B-60 Series

**Payloads:** Rear dumper, 6-12 cubic yards—Mixers, with 5-8 cubic yards agitating capacity (in six-wheel models). **Engines:** 150, 180 and 205 h.p. diesel; 150, 160 and 185 h.p. gasoline.

Mack builds trucks and tractors in a wide range of capacities. Whatever kind of operation you have... whatever loads you haul... there is a Mack truck that will do the job economically and efficiently.

Your nearest Mack branch or distributor is qualified by knowledge and experience to help you select the Mack best suited to your requirements. And when it comes to parts and service the Mack-trained mechanics and genuine Mack replacement parts found at your nearest Mack outlet can make a big difference in your truck's operation. Mack Trucks, Inc., Plainfield, New Jersey. Mack Trucks of Canada, Ltd., Toronto, Ontario.



**MACK**  
FIRST NAME FOR  
**TRUCKS**



PRINTED IN U. S. A.



## Mack B-80 Series

**Payloads:** Rear dumper, 12-16 cubic yards; Mixers, with up to 12 cubic yards agitating capacity (in six-wheel models... larger with special provision). **Engines:** 180, 205, 220 and 320 h.p. diesel; 232 h.p. gasoline.



## Mack M Series

**Payloads:** Rear dumper, 15-, 18-, 25-, 30-, and 45-ton models for off-highway service. **Engines:** Diesel power up to 525 h.p. Choice of mechanical or torque converter transmissions.

# Highway Morality Can't Be Left to The States

When the New Mexico highway scandal is cleared up, and other current fires put out—then what? As political regimes come and go in the states and in Washington, can the road program be kept sweet and clean?

Various proposals are now advanced to assure this end. One is for the contractors to police themselves. This they've done in a greater measure than they've generally received credit for. But nevertheless, whole state chapters have come to the edge of disrepute. While individual contractors may be blamed for proved wrong-doing or shoddy work, the real cause lies deeper.

Clearly a set of strong controls must be perpetuated in Washington. The advance in highway technology and the progress in creating our highway network since the 1920s have been centered in state initiative. Nevertheless, policing of honesty is one part of the highway administrative effort that needs federally to be played close to the vest.

The reason lies in a look at U.S. political history. At any given time there have always been state political regimes that were shot full of scandals. Some have been known to be just plain morally poor throughout. Others were weak and permitted individuals or departments to be corrupt.

When glittering billions of 90 percent federal money are ladled out, as has been done since 1956, the

temptation is too strong and the pressures too great for the past system of self policing and of Bureau of Public Roads control by moral suasion to work everywhere and all the time.

The present Washington working tools for getting a clean dollar's worth of road construction in federal-aid highway work are four in number: (1) the ability, willingness and courage of the Bureau of Public Roads to withhold federal-aid from a state for cause; (2) the new tightened spot-checking and record sampling of the Bureau, together with other aspects of tightened management of construction quality; (3) the federal auditing procedure; and (4) the Blatnik and other investigative committees.

None of these can do it alone. All are needed, Blatnik-type investigative work being most important. The chief concern should lie in seeing that at least one such incorruptible federal sleuthing organization always exists. The very existence of such a group will tend to keep everyone in line. Its work in the long run can indirectly keep the road program out of trouble and build congressional and public confidence.

This need for this strong Washington hand in no way lessens the responsibility of the state highway departments for basically running their respective shows. This the state highway agencies must continue to do, often under less-than-the-best political conditions.

**Harold J. McKeever**





Density probe operating in foreground, technician making slide rule calculations while taking meter readings, and moisture probe at right of truck illustrate simplicity of nuclear testing. The moisture probe will affect the density probe CPM unless kept 15 ft. distant during density test.

## Nuclear Testing Expedited Airport Grading Job

By H. K. Glidden  
Contributing Editor

Engineers and contractors concerned with earthmoving have long recognized the need for a fast, accurate method for testing soil moisture and the degree of compaction in subgrades and embankments. All tests commonly used require the taking and analyzing of a sample, a laborious and time consuming task. Present tests also have the disadvantages of being subject to several human errors, particularly in determining the in-place volume of the sample and its weight. There is always the question as to whether the sample is truly representative of the mass. And, the process of compacting a laboratory sample by repeated hammer blows bears little relationship to the manner in which the contractor applies compactive effort out on the job.

While nuclear testing has been discussed pro and con for several years, Denver engineers are among the pioneers on its on-the-job application. They have gained a great deal of experience with Nuclear-Chicago testing equipment, as the soil testing workhorse on Northwestern Engineering Company's grading contract for the new runway extension at Stapleton Field, Denver's Municipal Airport. This experience has convinced the city's engineers in charge that this device successfully eliminates the objectionable features of other test methods. Midway through the project, the contractors staff had voiced no objections to nuclear testing and had shown appreciation of its speed.



Close-up of moisture probe.



Moisture probe on left, density probe on right, two Nuclear-Chicago 2800 d/M scalers in rear, and standard paraffine block center comprise entire testing equipment.

## **The Denver city engineer's office found nuclear testing for moisture and density determination to be accurate, fast, and economical on the four million cubic yard jet runway grading project at Stapleton Airport**

The Denver city engineer's office was faced with some obstacles in trying to purchase nuclear testing equipment. First, the equipment was fairly expensive; the units finally purchased cost \$7,000. Second, it was difficult to show by someone else's experience that the results obtained by the equipment would warrant the high cost. In other words, there was an almost complete lack of actual use data correlating the results of nuclear testing with those obtained by the more conventional methods. The Federal Aviation Agency, co-sponsor on the grading project, also had to be sold on the idea, as it would participate in its purchase. These hurdles were finally overcome and the equipment was purchased in March, 1961.

### **How the Equipment Works**

Although the electronic principles involved in the equipment are exceedingly complex, use of the equipment is quite simple. The basic principle of operation is analogous to the use of a Geiger counter. Radiation from a nuclear source penetrates the embankment and a certain fraction of rays reflected back. The device containing the nuclear source is called a probe. The moisture probe, using five millicuries of radium beryllium, depends for its operation on the radiation reflected back from hydrogen atoms. The density probe, using three millicuries of cesium 137, depends for its operation on the radiation reflected by the mass of

material encountered. This accounts for the fact that there must be separate probes for moisture and density. As shown in the accompanying photographs, the probes are rectangular stainless steel boxes, and weigh only a few pounds.

The amount of radiation reflected is measured on what is called a scaler. The same scaler can be used for both probes. However, only one probe can be connected at a time. Changing the connections is a time consuming job, subject to some possible errors and damage to the equipment. In addition the voltage operating the scaler must be changed for each probe. For this reason, Denver bought two scalers, one for each of the probes. Having two scalers makes it unnecessary to change either the connections or the operating voltage. The Denver staff mounted the two scalers on 1-in.-thick foam rubber padding in the back of a panel truck.

The interesting features of the scaler are the five dials and the automatic timer. The five dials resemble a gas meter except that the readings are recorded by rotating flashing lights, similar to the blips on a radar screen. The right hand dial measures the individual impulses, while the dials to the left cumulatively add the individual impulses in increments of ten. Accurate timing of each test is mandatory as the reflected radiation varies directly with any over or under exposure. When the operator pushes the button, the automatic

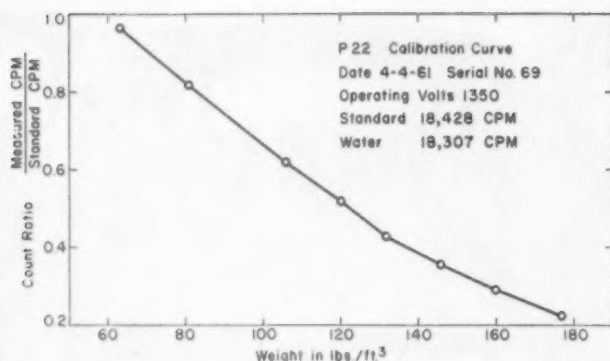


Fig. 2. A typical density calibration curve for nuclear testing on the Denver airport project.

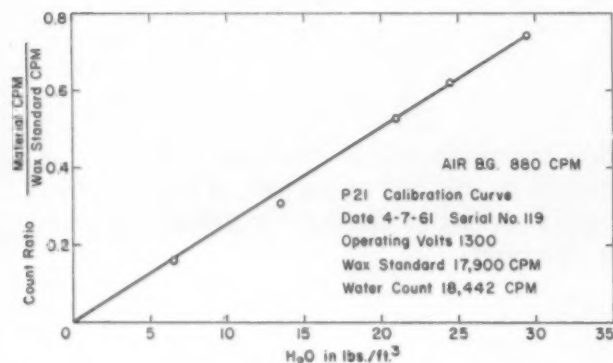


Fig. 3. A moisture calibration curve for the Denver project.

automatic timer takes over and stops the test exactly at the end of one minute. The accuracy of the one-minute timing is checked periodically by connecting the equipment into a 60 cycle electric source.

#### Safety Devices Built In

The equipment has every possible safety device built into it. The probes are shielded except on the bottom. The handle of the probe, when in the off position, shields the bottom. The only obvious source of danger would be for the operator to forget to turn the handle into the off position before removing the probe from the test area.

The test procedure follows four easy-to-perform operations. First, the operator shovels off a level spot on the fill. The next step is to bed the probe so that the bottom comes in direct contact with the fill, since

voids between the probe and the embankment surface affect the reflected radiation. Denver used sand when necessary to insure a good bedding of the probe. As the third step, the operator takes four one-minute readings. Two readings are taken in the original position of the probe. The last two readings are taken with the probe rotated 90 degrees. Taking a reading simply involves pushing the start button and then waiting for the lights to stop flashing. The readings are then recorded on a specially prepared form and the start button again pushed. This third operation is the same for both the moisture and density probes. The fourth step is to make the necessary calculations to determine density and moisture. This whole operation takes about eight minutes.

The biggest delay the Denver engineers have encountered is the driv-

ing by car from one test location to another, and conferring with inspectors and the contractor's men as to where tests are needed. The field staff has made as high as 27 tests per day, although the average is about 16 or about 100 in a six-day week. Only simple slide rule calculations are involved.

The scaler readings are recorded in counts per minute (C.P.M.) representing the reflected impulses from the nuclear source. The test C.P.M. can then be compared to the standard C.P.M. The standard count for the moisture probe is obtained when the probe is placed on a specially prepared paraffine block - high in hydrogen atoms. The standard count for the density probe is obtained when the probe is in its case. The engineers check the standard count for both probes daily.

Continued on page 78

#### NUCLEAR FIELD DENSITY TEST

PROJECT: 9-05-010-23  
DATE: 5/7/61 TIME: 5:53  
TEST SITE: N-S Runway  
STATION: 87+50 REF. TO C: 75'E46

DENSITY	MOISTURE
<u>7920</u>	<u>2861</u>
<u>7864</u>	<u>2920</u>
<u>7704</u>	<u>2915</u>
<u>7741</u>	<u>2872</u>
<sup>4)</sup> <u>31229</u>	<sup>4)</sup> <u>11568</u>
<u>7807</u>	<u>2892</u>
<u>17569</u> 0.444	<u>17404</u> 0.166

<u>131.7</u>	#/FT³ WET DENSITY
<u>6.0</u>	#H₂O/FT³ MOISTURE
<u>125.7</u>	#/FT³ DRY DENSITY
<u>4.8</u>	%MOISTURE BY DRY WEIGHT

MAX. DEN.	FIELD DEN.	SHAL. COMP.	REQ.
<u>138.4</u>	<u>125.7</u>	<u>94.9</u>	<u>90.0</u>

#### STANDARD COUNT

DENSITY	MOISTURE
<u>17,707</u>	<u>17,325</u>
<u>17,445</u>	<u>17,543</u>
<u>17,580</u>	<u>17,249</u>
<u>17,547</u>	<u>17,449</u>
<sup>4)</sup> <u>70,279</u>	<sup>4)</sup> <u>69,616</u>
<u>17,569</u> AV.	<u>17,404</u> AV.

Fig. 1. Example of actual density test data with the nuclear device.



## Contracting Management:

# How a Pension Plan Can Help the Small Contractor

By I. Austin Kelly, III

President, National Employee Relation Institute, Inc.

**S**omething new is happening in pension planning for small and medium-size firms in the highway construction field—so new that many owners and executives are still unaware of it.

I'm not suggesting that you haven't heard a great deal about pension plans. You've probably listened to numerous "sales pitches" by insurance men and other pension salesmen. You are at least vaguely aware that these plans offer certain tax advantages to you and your company. But you have also heard that pensions involve *fixed annual deposits*—and that may have been enough to scare you off.

If so, it is certainly understandable. "Fixed deposits" are the chief reason why pension plans are only just beginning to show up in noticeable proportions in the highway construction field. No industry which depends so largely on bids and contracts can afford to commit sizable sums into the indefinite future.

But pensions *are* beginning to appear in the highway contracting industry. Today it is possible to have a pension plan without exposing your company to the dangers inherent in "fixed deposits." This development is still too new to be found in every plan, but company owners who know where to look are now leading a pension parade which, it is predicted, will eventually include a substantial

percentage of firms in the industry.

Before I explain how "fixed deposits" can be avoided, perhaps I should review some of the reasons for having a pension plan in the first place. Some highway contractors are abandoning their old bonus system or other forms of added compensation in favor of a pension plan. The reason is a two-fold one. Pensions provide this extra income on a tax-free basis (the advantage over a bonus is obvious). And they permit larger portions of this income to be credited to the company owner and his key men than is possible under profit-sharing. Some persons are inclined to be self-conscious about this point. They consider it a selfish reason. I say this is ridiculous. Who is more entitled to take money out of a business than the man who owns it? Particularly since he has probably plowed most of his earlier profits back into the firm during its hungry, growing years.

Likewise, one of the chief reasons for deferred compensation is to reward the company's key people by providing them with tax-free income—thereby insulating them against higher salaries offered by competitors. If a pension plan happens to give these persons—and the owner—the biggest share of the "pie," it is because they deserve it.

Just what specifically are the tax advantages of a pension plan? The accompanying chart tells the story. Notice that Plan B—the pension

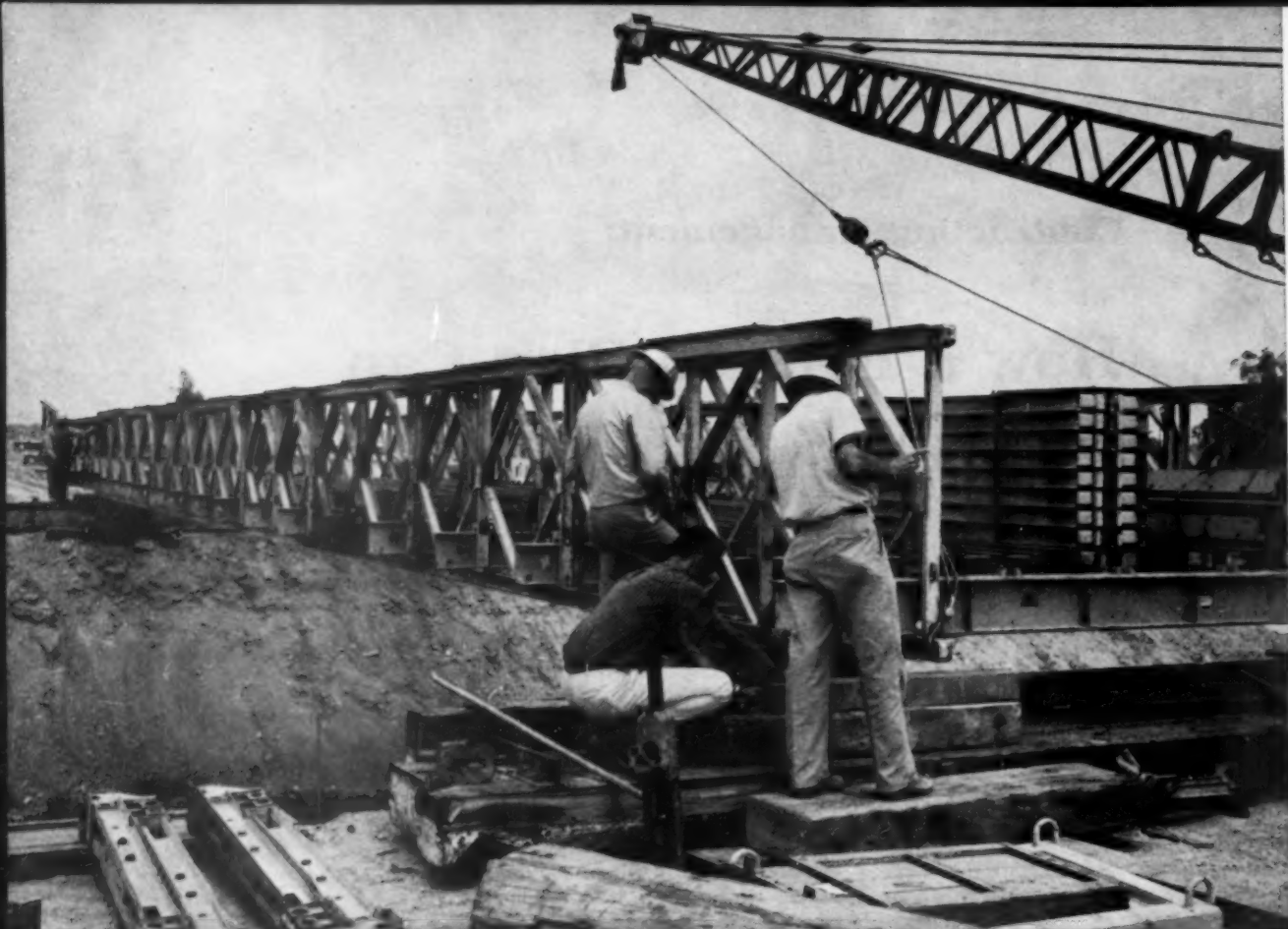
method—enables an owner to more than double his net withdrawal over a period of ten years. This same ratio applies whether the annual amount is \$10,000 or \$100,000.

Now for news on "fixed deposits." It is true that plans offered in the past, and many plans still in existence today, do require a specific annual deposit. Generally these are the "stock model" plans. Yet by taking advantage of recent Internal Revenue rulings, company owners now can design a plan to profits. This means how much can be afforded to put into your plan in a normal year. If profits go down, deposits can be reduced or even skipped entirely. The owner has the privilege of making up any arrears in future years. Or he can simply lower the benefits proportionately. The plan can also be dropped without losing all that is put into it.

Perhaps you're saying, "Sure, you get this flexibility in a custom-designed plan, but isn't such a plan more costly?" Usually, it turns out just the opposite. A custom-designed plan enables the owner to eliminate the "frills" which cost extra money in many "stock model" plans. First decide what to try to accomplish, then have the plan designed specifically to fit the needs and budget.

Suppose you are a small contractor with 10 or 15 employees. Are all of these people so essential

*Continued on page 90*



Two trusses wide and one truss tall, this unit is called a "double-single." The double-single structure shown is 80 ft. long, has a safe load capacity of between 35 and 45 tons and weighs 26 tons.

A "double-double" for loaded haul rigs and a "double-single" for empties. Both bridges were assembled in hours and now span a busy traffic artery cutting through the San Diego Freeway fill.



# Bailey Bridges Cut Freeway Haul Road Costs

**T**he Bailey bridge, the Erector Set type structure made famous during the World War, is still occasionally finding good use in emergency situations. One of the latest examples is its extensive and profitable use by Guy F. Atkinson Company on a 10-mile section of the San Diego Freeway in Southern California.

Twelve of these prefabricated steel structures have served as haul road bridges over heavily traveled arteries cutting through the freeway in San Fernando Valley. Here they have helped eliminate the costly and time consuming abutment work normally required for job-fabricated haul bridges. They've

avoided traffic control problems during bridge erection. And they've significantly reduced approach repair work such as is often required following haul bridge removal.

The Bailey bridges used by Atkinson were rented from a southern California firm that acquired them in government surplus sales. In the past these bridges have found occasional use as access bridges on construction projects. This, however, is their first application hereabouts for haul road purposes.

Design flexibility of the Bailey bridge permits assembly of structures of different load capacities. This is done simply by varying the number of trusses fabricated from

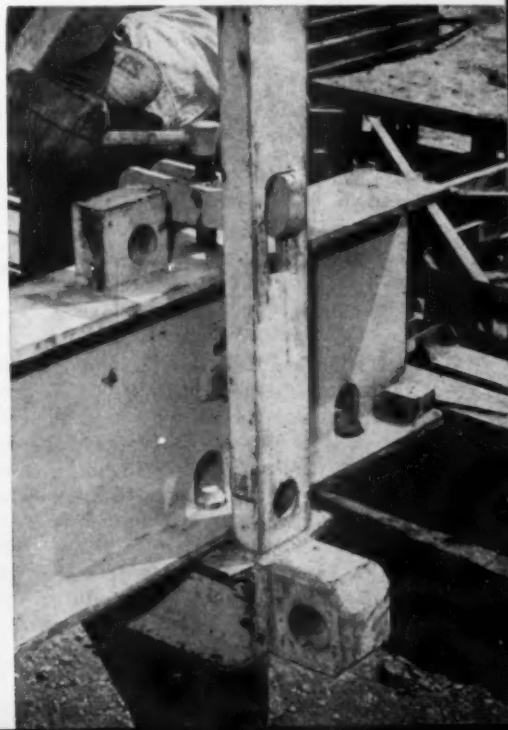
the 10-ft-long truss panels. Although it is possible to construct a Bailey bridge three trusses wide and three trusses high, called "triple-triple," Atkinson's biggest structure is a "double-double"—a single-lane structure 110-ft-long for handling high-speed bottom dump rigs grossing in excess of 70,000 lb. The rest of the Bailey bridges on the job are double-singles or triple-singles, bridges using two or three trusses side-by-side on each side of the 12½ ft. roadway.

Bridge assembly is fast and easy, according to Atkinson personnel. The bridge rental firm provides erection supervision. Most bridge designs can be assembled and in

Hand setting a bridge support! It's a one-man operation on the Bailey bridge. Support preparation: timber cribbing laid on the fill to provide a base for the steel support plate.



Holding the transverse floor beam in place on its positioning pin in the truss stringer, is a screw clamp which hooks into a recess in the vertical member of the truss.



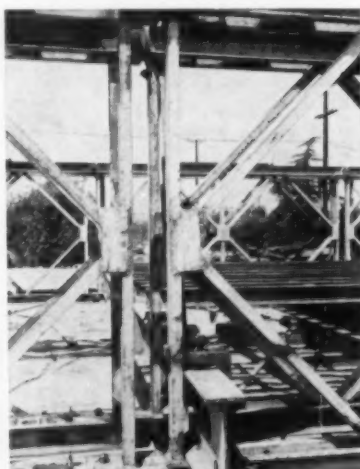




An assembled Bailey bridge being "launched" across a highway with no traffic control required beneath. The light nose framework will be removed when the bridge is in place.



The longitudinal stringers making up the Bailey bridge deck seat between brackets on the upper flange of the transverse floor beams.



Ten-foot truss sections are pinned together at the top and bottom; and transverse floor beams seat over pins on the longitudinal stringer. This is a "double-single"—two trusses and one truss high.

operation in a day's time, with only the aid of a light truck crane. (The Bailey rental company notes that the record for assembly and positioning an 80-ft. bridge is held by a group of 47 Army Corps of Engineer personnel, who, with no crane to assist them, completed the entire job in 39 minutes!)

The erection speed is a product

of the design and assembly methods of the bridge components. The largest units—floor beams—weigh 618 lb. The 10-ft.-long side panels making up the trusses weigh 577 lb. each. With only a few exceptions (occasional knee braces), the whole structure is put together with pins. There is no welding, no need for power tools.

Elaborating on the contractor benefits of this kind of equipment, Atkinson people emphasize that the work can be done during daylight hours, hence eliminating the expense and inefficiency of nighttime overtime work.

Control of traffic on the roads underneath the bridge is not essential, even when the structure is being "launched" over the road. A special launching nose and the use of rollers on the bridge pads make it possible for the whole structure to be assembled on one side of the fill, then cantilevered across the gap with the weight of the assembled bridge counterbalancing the lighter nose section until it reaches the pads on the far side of the overcrossing.

The lightness of the component parts permits use of the smallest stringer cranes, and the relatively low rental costs of these cranes contributes to the economies of using this type of structure.

The finished bridge in each case has a 3-in. timber deck laid over the transverse floor beams and longitudinal stringers. Steel curbs are secured to the deck to provide 12½ ft. wheel clearance. The steel pads supporting each end of the structure rest on timber cribbing laid atop the compacted fill, and a simple earthwork approach is used to bring vehicles on and off the bridge.

A 20-YEAR HIGHWAY MODERNIZATION program to cost \$7.3 billion is proposed in reports submitted to the Missouri joint state legislative committee on roads, streets and highways. Construction would run to \$243 million annually, compared with \$140 million spent in 1958.

One of the reports was by the automotive Safety Foundation following 15 months of study. The other, by the School of Business and Public Administration, and the Bureau of Business and Economic Research at the University of Missouri.

The Foundation's report warned that nearly every mile of the state's 110,000 miles of highways, roads and streets will wear out or become obsolete, requiring major improvements or extraordinary maintenance during the next 20 years.



Special spreader made up by Eisenhour Construction Co. forming and finishing a 4-ft. concrete widening slab. Seen here also is the propelling motor grader which in turn pushed the agitator truck.

## Concrete Widening Formula:

# Central Mix, Agitator Delivery, Special Spreader

A special widening spreader box helped a Michigan contractor get good footages on a paving job during 1960. This shop-built unit came into play on the \$338,000 joint-venture contract of Mid-America Engineering Corp., Skokie, Illinois, and Eisenhour Construction Co., Lavonia, Michigan. The job was for widening and repaving 8.59 miles of state route M-20 northeast of Muskegon.

Widening here involved a 4-ft. strip of concrete along one side. The entire 24-ft. surface was then given a 2 1/2-in. bituminous topping.

Mid-America built up the extended shoulder and did the paving. Eisenhour laid the concrete for the widening.

Drainage pipes and ditches were moved further out, where necessary. Then trucks brought in borrow material for added shoulder width. This sand, itself, was obtained under happy circumstances. Mid-America had a borrow pit available, but found that officials of the railroad which paralleled much of the road would be pleased to contribute dirt. This came from removal of hillocks that had caused

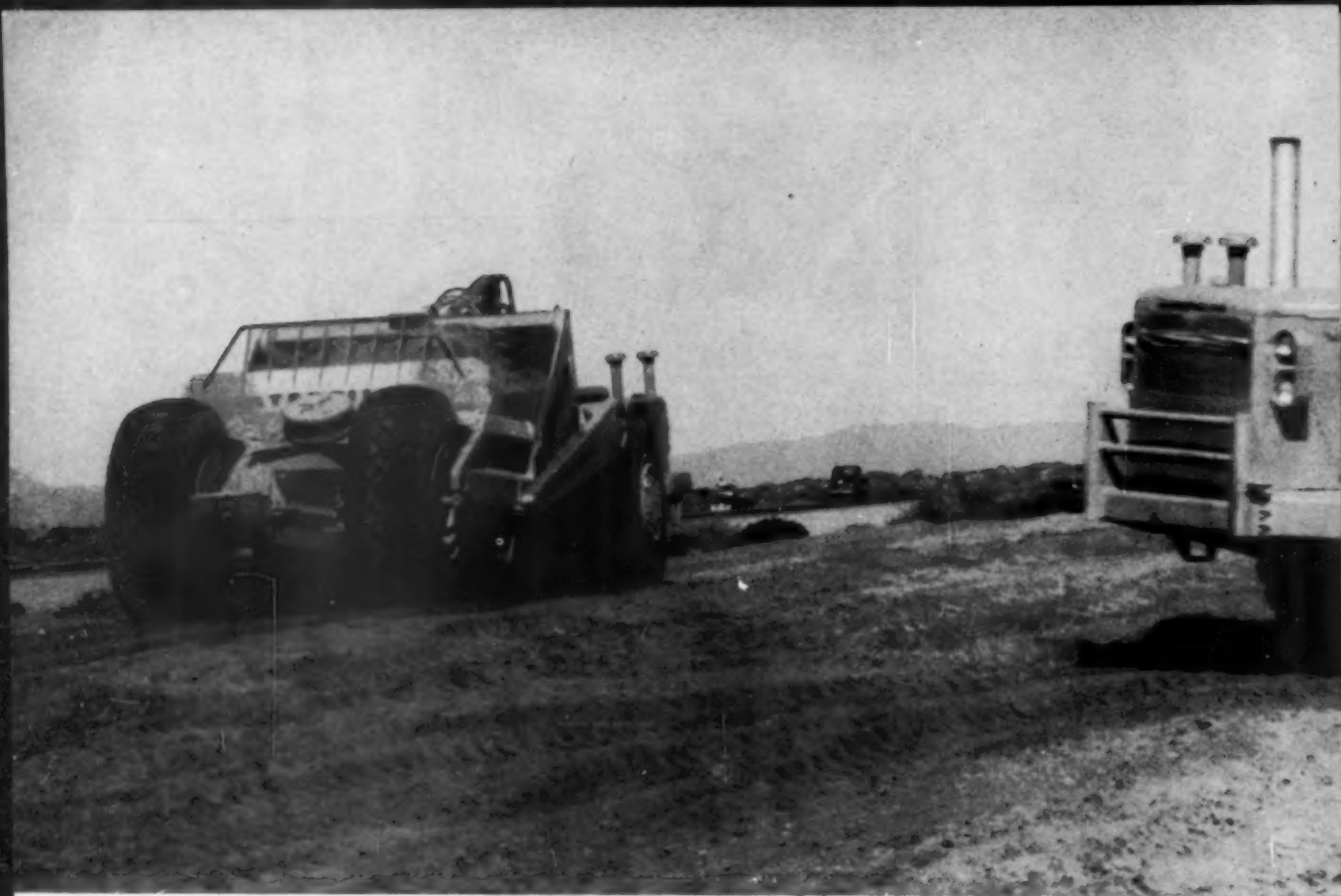
snow drifts along the railroad right-of-way. Since these conditions were repeated frequently, the contractor found his haul distances cut considerably.

Borrow material for the shoulder, totaling 8,000 cu. yd., was spread and compacted by an Allis-Chalmers HD-15 dozer.

Excavation for the widening strip was done with an Ulrich trencher attached to a motor grader. The slab was reinforced by 1/2-in. longitudinal bars at 12 in. centers.

Central-mix concrete was ob-

*Continued on page 52*



## Three-to-two production payoff with Cat power shift 631s

"I get three trips to every two of (another type power shifting scraper) on a half-mile haul," says Arthur Fleming, operator for Armstrong & Armstrong, of Roswell, N.M. They added three 631s to their fleet in February and put them right to work on a road job near Las Cruces. This payoff is typical of other contractors on job after job, where results—not claims—do the talking. Check other results on this job.

"Leaving the pusher, I can shift right up to second range within 150 feet," Fleming adds. "I just floorboard it, and the engine winds right up. In a couple hundred more feet I can shift up to third range. It has so much power it's rarely in torque

divider drive (see *INSIDE STORY*), even carrying a big load in this sand.

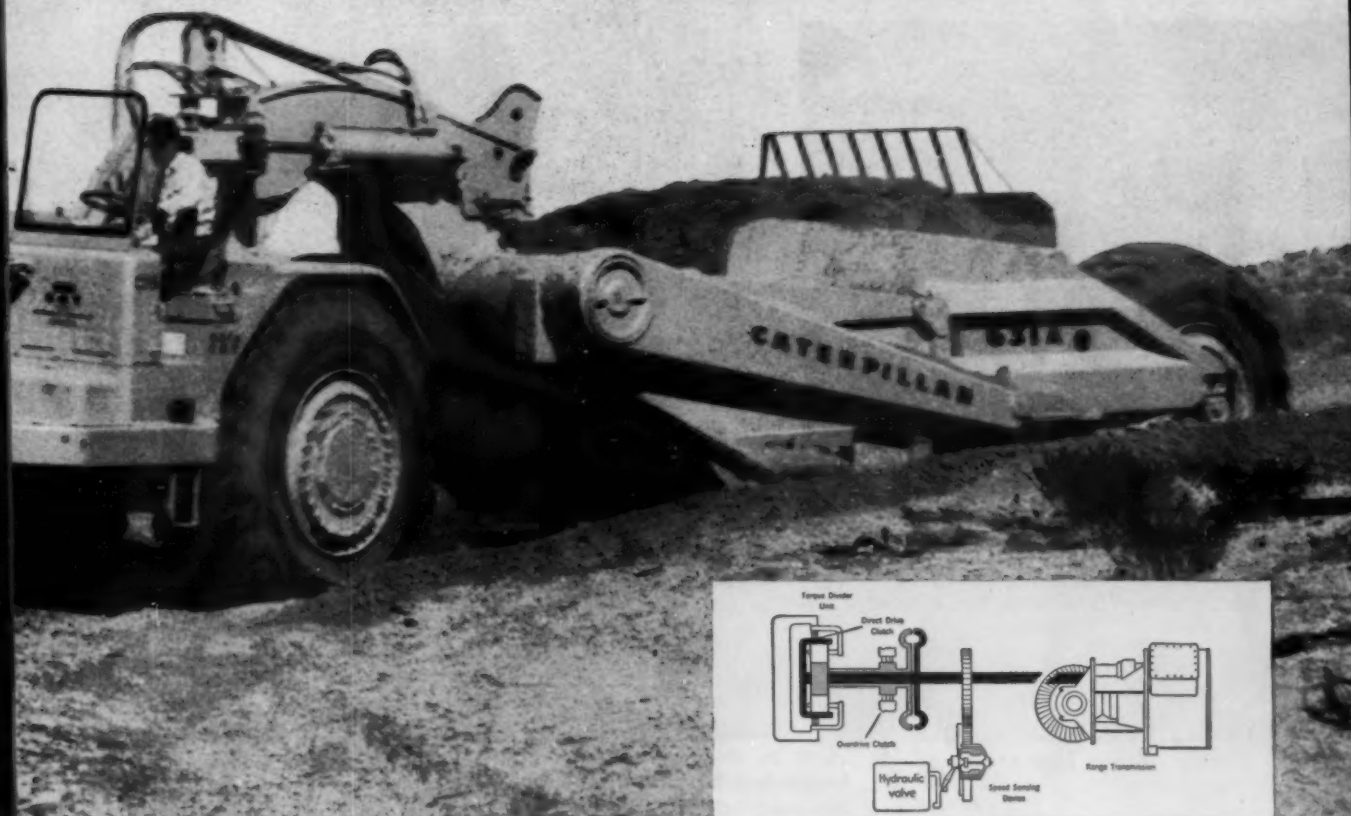
"Between the power and the automatic shifting, this is a snap to run. It works great on the fill, too. I have to get an even spread to meet state specs (4-inch compacted lift). I just head down the fill and watch the scraper to dump evenly. If it hits a soft spot, the machine shifts down automatically and keeps right on going. I don't have to worry about shifting and the scraper doesn't bog down."

### Power automatically matched to the job

What's the difference between Cat power shift transmissions and ordinary power shifts? Basically, the Cat unit matches power *automatically* to job conditions. It's the only unit that gives you a torque converter's ability to balance speed and torque to suit underfoot conditions, but it cuts it out for high-speed operation on the haul road to give you more efficient direct drive and overdrive. Results: faster cycles and higher production.

But *job-matching* power and *efficient* high speed are just two of the advantages designed into the power shifting 631s. Full unit construction allows every major component to be serviced without disturbing adjacent units. For example, the torque





divider transmission is removable without disturbing the engine.

### 31 MPH+smooth ride gives high usable speed

The 631A, powered by a turbocharged, after-cooled 420 HP engine and carrying 28 yds. heaped, has a high usable speed of 31 MPH. Smooth ride is important in being able to use this speed. Bill Botwinis, chief engineer for Armstrong & Armstrong, commented, "I'm amazed the operators can stay on these machines as fast as they go over the rough spots. They slow down the other machines, but not the 631s. They just don't bounce so much."

Want more proof how the 631 can outproduce, at lower cost per yard, any other machine in its class? See your Caterpillar Dealer!

Caterpillar Tractor Co., General Offices, Peoria, Ill., U. S. A.

# CATERPILLAR

Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

**PRODUCE MORE AT  
LOWER COST WITH A  
POWER SHIFTING 631**

... for more details circle 291 on enclosed return postal card

## INSIDE STORY on the Cat power shift transmission...nine speeds with just three shifts

Cat power shift transmissions for wheel tractors match power to job conditions by automatically shifting—up or down—through three types of drives in each of three selected speed ranges. Results: nine speeds with just three shifts.

A range transmission mounted on the rear of the machine is operated by a single control lever. This one lever gives you three forward ranges, reverse, neutral and a special load range.

Automatic shifting is accomplished in the torque divider unit by a simple mechanical speed sensing device and a hydraulic valve actuating clutches. The 631 starts moving in torque divider drive, a combination of torque converter and direct drive. As speed picks up, the hydraulic valve engages a clutch to shift from torque divider drive to direct drive, locking the converter out of the system. At a higher RPM, a second automatic shift takes place—from direct drive to overdrive. If the machine slows down, this process is reversed... giving automatic downshifting. A shift indicator (tachometer) shows when to change speed range up or down as needed.

To keep the machine at top production, just keep the accelerator floorboarded all the time. Then you'll always have the right speed and power for the job you're doing—take full advantage of the transmission designed for the machine you're using.



The company's portable central-mix plant with tilting mixer. This plant also serviced other Eisenhower jobs in the area.



Another view of the spreader box and concrete-supply via agitator concrete body and chute.

## CONCRETE WIDENING

*Continued from page 49*

tained from the company's Rex plant, a portable unit with a 3-yd. tilting mixer and capacity of 100 cu. yd. per hour. The mix, trucked to the site in S&M agitator bodies, was chuted out to an Eisenhower contractor-built unit, a  $\frac{1}{2}$  cu. yd. spreader box placed at the front of the motor grader and extending out to the left—with the grader pushing the truck in the manner of an asphalt finisher. A small vibrating screed and a wooden float, both adjustable for height and also supported by the grader, followed the spreader box.

For curing, a membrane was applied by spray from another unit improvised by Eisenhower, a wheel-mounted container pushed by hand.

Average haul distance from the central-mix plant was six miles. With proper weather conditions, the company was able to put down two miles of this 4-ft. strip per day.

In advance of Mid-America Engineering's paving crew, a Chevrolet 6500 truck with 1,500-gal. tank and Fraco spraybar, distributed a bonding emulsion or tack coat over the existing concrete base at  $\frac{1}{4}$  gal. per sq. yd.

For the full-width resurface two  $1\frac{1}{4}$ -in. courses were laid in 12-ft. widths by a Barber-Greene finisher. The binder weighed 130 lb. per sq.

yd. The surface course was rated at 120 lb. Two Galion 10-ton steel rollers handled the compaction.

Mid-America's 4,000-lb. Standard Steel Corporation hot-mix plant in nearby Muskegon, maintained 700 tons a day. Ten trucks with 12-ton loads hauled an average 15 miles. The 24 ft. overlay on this  $8\frac{1}{2}$ -mile job took three full working weeks.

William H. Lang is president of Mid-America Engineering Corp.; Harold Rice was project engineer. J. Eisenhower is president of his firm; Clare B. Copeland, vice president, supervised construction on the route M-20 project. Tom Dillingham was inspector for Michigan state highway department.

## New Federal-Aid Road Specification Book

The U.S. Bureau of Public Roads has issued a new edition of "Standard Specifications for Construction of Roads and Bridges on Federal-Aid Highway Projects (FP-61)." 371 pages. Available from Superintendent of Documents, U.S. Government Printing Office, Washington 25, D.C. Price \$2.25.

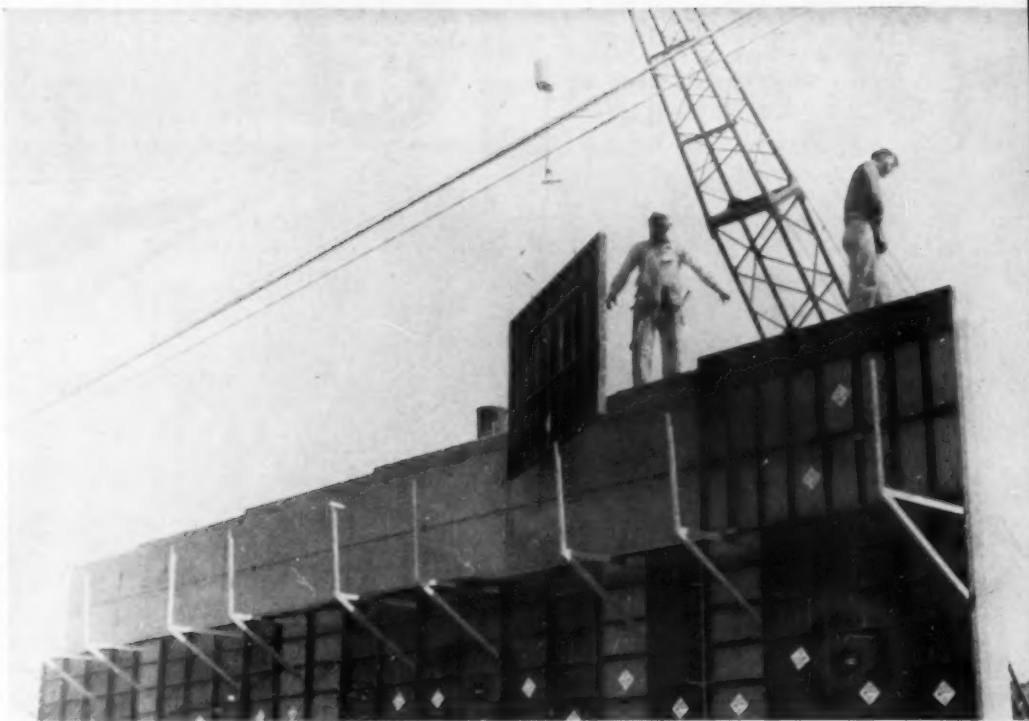
The new specifications are intended primarily for use with proj-

ects constructed under direct supervision of the Bureau (direct federal-appropriation projects for highways in National Forests, etc.), or for work performed by the Bureau for other federal agencies. They are NOT intended or required for projects performed by state highway departments under federal-aid disbursements, since, as prescribed by law, each state has its own specifications subject to Bureau approval. However, the new Bureau specifications are considered of wide interest to specifica-

tion writers, designers and others in highway work as well as students.

The new "Book" incorporates many latest developments. For example, latest thickness tolerances for pavement layers; use of the diesel pile hammer for pile driving, radiograph checking of structural steel welds, and other details representing thousands of different comments and suggestions from highway agencies, research bodies, national organizations of contractors and material producers, and others.

Two men and a crane made fast work of stripping forms on this bridge abutment. Symons forms had been set horizontally and stripped in sections similar to gang forming. Note scaffold brackets which aided materially in setting up the forms.



## Forming Plan Simplifies Bridge Job

**B**uilding the piers and substructure for nine twin highway bridges fast and under a tight bid price can be done with practically no equipment, *if*—and that if involves figuring concrete formwork correctly.

That has been the experience of Moore Brothers Construction Co., of Verona, Virginia, as it rushes work on a 28-mile superhighway between the new Dulles International Airport at Chantilly, Va., with Washington, D.C.

The bridge job was started in mid-April 1960, with completion March this year, giving eight months of workable construction weather. The bid price (not including the steel work) was \$600,000. That covers structures that

will have from two to as many as six piers of reinforced concrete (about 9,000 cu. yd.) plus excavation and finishing work.

The work is being done with just one major machine on the site: a light P&H crane, which doubles as an excavator and a crane to lift concrete atop the pier forms. The 17-man crew includes only two carpenters—a crew that is enough to do the rest of the work on two separate bridges at a time.

The contractor credits Symons Steel-Ply forms as the key to his progress. On the Chantilly project, as in others, the forms can be assembled, broken down and moved easily by manpower so that the forms can be re-erected on a second pier while the first is being stripped.

As a “for example” the contractor points to the twin-bridge structure on which the dual-lane airport superhighway will cross local Route 657, near the airport (western) end of the job. Each of the twin bridges will be 169½ ft., abutment to abutment, in three equal spans.

The two concrete piers for post-and-beam steel bridge roadway—placed in pairs on either side of the existing local highway—will each be 21 ft. high, 47 ft. long and 3 ft. thick above the footing.

With these dimensions in mind, here is how W. C. Hewitt, general superintendent, and Vernon Farris, job superintendent, are attacking the job:

First unit on the site is the exca-  
*Continued on page 56*



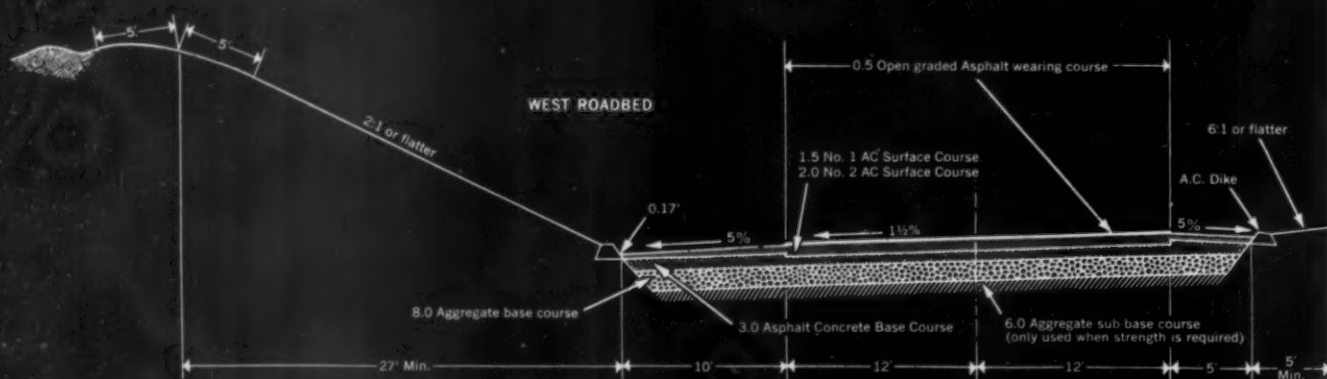
**FINISHED ROADWAY** on California Interstate Highway 15. Asphalt dikes and embankment on right show unusual drainage design to combat flash floods in Baker Sink region of high Mojave Desert plateau.



**ASPHALT DIKES** on shoulder edges direct surface water to drainage outlets.



**STONE CRUSHERS** make use of local aggregate found at site to offer California taxpayers important savings.



# CALIFORNIA HIGHWAY ENGINEERS SPECIFY DEEP STRENGTH ASPHALT CONSTRUCTION

## Asphalt dikes and ditches to divert Mojave Desert flash flood water from Interstate Highway 15.

California's largest asphalt pavement highway contract used local aggregate crushed on site resulting in substantial economies.

For the 25.2-mile four-lane, divided limited access section of California Interstate Highway 15 that replaces U.S. Route 91 from 1 mile east of Baker, California, to 1 mile east of the Cima Road, engineers of the California Division of Highways chose the Advanced Design Criteria for modern DEEP STRENGTH Asphalt Construction.

**Natural Obstacles . . .** Location in southeastern California on the high eastern Mojave Desert plateau, with elevations from 1,000 to 4,000 feet, posed some unusual design problems. Temperatures range from 115° in summer to 25° in winter, rainfall averages only 4¾ inches annually (which usually occurs as hard downpours).

Flash floods occur because rainwater reacts with minerals in the dry sand to form an impervious crust. The resulting rapid surface run-off must be controlled to prevent undermining of the roadway. California Division of Highways through many years of study has developed an effective solution to these unique drainage problems by use of diversion ditches and dikes.

**DEEP STRENGTH Design . . .** The cross section below shows how California engineers made use of the principles of DEEP STRENGTH Asphalt Construction. Note 4" surface and wearing courses with 3" asphalt-concrete base course. The 8" aggregate base and 6" subbase (where necessary) consist of *water-bound* layers of 1½" max. stone compacted with pneumatic rollers and steel tandem rollers. The 8" aggregate base is primed with 0.25 gal. per sq. yard of SC-2 before asphalt-concrete base course was spread. Total thickness is 15 inches to 21 inches depending on the subsoil.

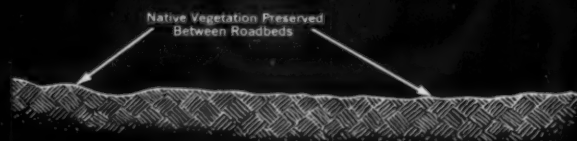
A median 90 ft. wide was used, with no treatment. (The crust and scant vegetation on median surface was kept intact to minimize erosion during periods of high surface run-off and/or wind.) Outside shoulders are 10 ft. wide and paved. Inside shoulders have 2 ft. paved and 3 ft. unpaved. (In cut sections, 5 ft. wide, all paved.)

**Taxpayer Saving . . .** DEEP STRENGTH Asphalt Construction allowed California's engineers to use local aggregate crushed at the site. This, plus the inherent economy of Asphalt Construction, results in important savings for the taxpayer of California. And low future maintenance costs on DEEP STRENGTH Asphalt will provide additional tax savings.

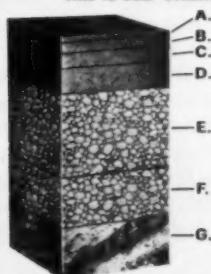


**THE ASPHALT INSTITUTE**

College Park, Maryland



THIS IS DEEP STRENGTH DESIGN ON CALIFORNIA INTERSTATE 15



A.	Wearing Course . . . . .	0.5
B.	No. 2 AC Surface Course . . . . .	1.5
C.	No. 1 AC Surface Course . . . . .	2.0
D.	Asphalt Concrete Base Course . . . . .	3.0
E.	Aggregate Base Course . . . . .	8.0
F.	Aggregate Subbase . . . . .	6.0
G.	Subgrade or Improved Subgrade . . . . .	—
	<b>TOTAL MAXIMUM THICKNESS</b>	<b>21.0</b>



Forms were used for first the pier in the background, then the one in the foreground for the opposite roadway bridge.

## BRIDGE FORMWORK

*Continued from page 53*

vator. Working as a shovel, it has cut through the topsoil and fractured red shale of the area to firm rock. The 3 ft. wide footing is then formed in the ground. A reinforcing bar cage, the full height and width of the pier, is then placed. Now Symons forms come into use. Built up rapidly, by hand operations and unskilled labor (except for two carpenters who position base plates), the forms are first built up on the pier site away from the existing roadway, with wood braces for support.

A second group of forms makes up the front and sides of the full pier. Ties from the supported back

side to the front, support the front formwork completely, so that no further bracing is required on that side. Concrete is poured at the rate of about three feet an hour with each pier poured in a continuous operation.

While work on one of the four piers is thus carried on, the workmen set up the back of the form for a second pier, on the same side of the road. Then, as soon as concrete in the first pier has hardened sufficiently, it is stripped, forms are carried to the second pier, and reassembled there.

Another aspect of this precision-like approach to forming: Farris had had no previous experience with this type of forms.

## Pre-Bidding Sessions For Maryland Projects

Since November of 1959 the State Roads Commission has been conducting pre-bidding sessions on most of their advertised projects. The purpose of a pre-bidding session is to better inform the contractors before they bid on a highway project relative to the problems which arise during the construction period. At some of these sessions contractor attendance has been very good and there have been questions asked which resulted in addenda beneficial to the state and to the industry. Some sessions have been poorly attended, with little discussion.

A bulletin to members from the

Maryland Highway Contractors Association Inc., notes a particular problem which it was hoped could be aided by these sessions: utility adjustments. At times the utility representatives commented that they had just received the plans on the project. In recent months however it seems that utilities are being kept advised more closely on the proposed advertising and actual construction schedules.

It is understood that the utilities feel that a "post-award" or "pre-construction" session would be more helpful than the pre-bidding session. Some persons have expressed the opinion that both are desirable, with the district engineer making the decision concerning scheduling the pre-bid.

## Traffic Safety

### RR Grade Crossing Safety

Permanent-type white reflectorized plastic compound is being used in Ohio as part of a major program of permanently marking dangerous railroad grade crossings.

The Ohio department of highways has centered its program on 110 grade crossings which have had a bad-accident history. The material used was Plastix, coated with a special adhesive which adheres immediately to the surface of the highway. The marking at each crossing includes a double cross line and the RXX lettering, as here pictured. The distance of the marking



Typical of pavement marking placed at 110 Ohio grade crossings.

from the crossing was determined by formula.

The program for grade-crossing protection was developed as the result of legislation enacted by the 102nd General Assembly of Ohio. A survey report revealed that Ohio has 10,852 grade crossings of public highways, only 2,752 of which were heretofore protected. The survey pointed out that the greatest returns in increased safety for dollar volume of investment could be realized in the fields of warning devices and improved sight distances.

### Curves are Major Accident Locations

About one-third of all fatal accidents on Colorado highways over the past five years occurred when drivers failed to negotiate road curves because, in most instances, they were driving at a speed too



fast for conditions.

This was one of the conclusions reported by chief engineer Mark U. Watrous of the Colorado department of highways, speaking in connection with the Governor's action Program for Traffic Safety. The program's state-wide theme for a recent month was "Speed Too Fast for Conditions."

Watrous said the highway department has posted curve warning signs on all major, high-volume roads where traffic engineering field tests indicate the signs are needed. More than 4,800 curves are marked with safe speed indications, but accidents continue because motorists fail to read and heed the signs, the chief engineer said.

Fifty-five of 161 fatal accidents reported during the first six months of 1960, occurred on road curves and claimed 63 lives. Most of the disastrous road curve crashes were at night. "Some of the drivers were traveling too fast for any condition on a public highway," Watrous asserted.

Patrous has reminded Colorado motorists that:

- (1) An advisory speed sign is posted below the curve or turn sign whenever the curve cannot be negotiated safely or comfortably at the speed limit posted for the area.
- (2) When no advisory speed sign appears with the curve sign, the driver should be governed by the speed limit sign for the area, making due allowance for any unfavorable condition.
- (3) Advisory speeds are determined for average conditions of traffic, daylight and good weather. The driver himself must make further allowance for bad weather, hours of darkness, unusual traffic, poor drivers or poor vehicles.

CONTRACTORS WHO FAIL to mark highway direction changes clearly are guilty of "inexcusable" negligence and must expect to pay the penalty for accidents they cause.

This was the sense of a recent Supreme Court decision upholding a lower court ruling on damages a local contractor must pay a widow of a 1954 accident victim. (The Pittsburgh-Press.)

Check them all . . .  
. . . and you'll choose

**EIMCO...**

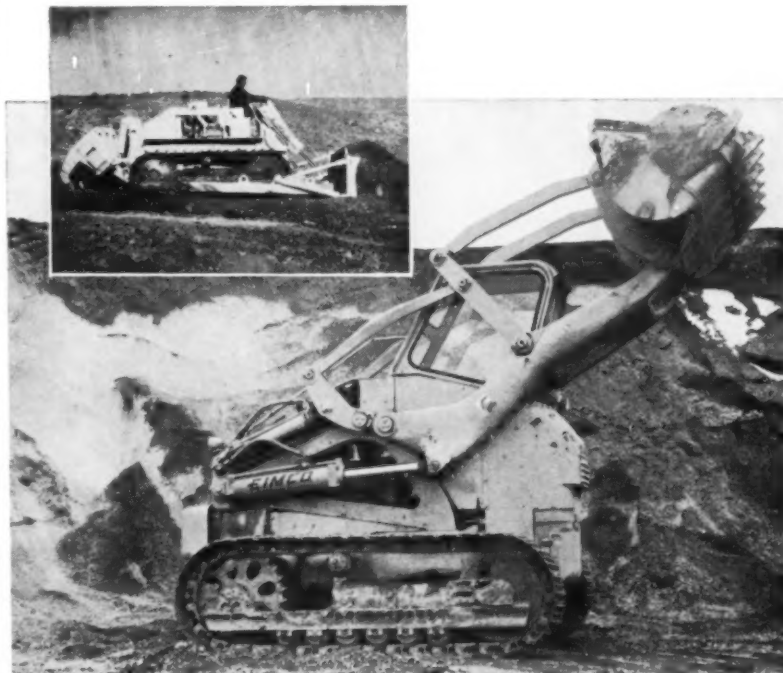
Before you buy any crawler loader or dozer, make your own comparison. Check the features and operation of the Eimco tractor of your choice against any comparable equipment. If you do . . . and you want to get the most for your money . . . you'll buy Eimco!

Only from Eimco do you get, as standard equipment: flip-of-the-lever automatic directional and speed shifting, "Unidrive" power-shift transmission, single stage industrial torque converter, dual final drives. These result in unmatched dependability and maneuverability, including true spin turns in the tractor's own length!

Up front operator position, an Eimco exclusive, results in unmatched visibility, safety and control. Every Eimco front end loader gives you higher lift and longer reach for easier loading; heavier arms, cylinders, pins and bushings, and a quality of engineering and construction that permits a full one-year warranty on every Eimco tractor and transmission.

From 107 to 218 HP diesel, there's an Eimco to fit your needs better!

**TRACTORS • BULLDOZERS • FRONT END LOADERS • LOG LOADERS  
EXCAVATORS • SPECIAL STEEL MILL LOADERS**



Write for the address of the Eimco dealer or branch nearest you  
and for Bulletin LS-1167.

The **EIMCO** corporation  
Head Office: Salt Lake City 10, Utah, U.S.A.  
Export Office: 52 South St., N.Y.



"Advanced Engineering and  
Quality Craftsmanship  
Since 1884"

B-813

. . . for more details circle 332 on enclosed return postal card



This mark tells you a product is made of  
modern, dependable Steel.



## Spring Scene...

with a hidden message for those who  
design, build and maintain busy streets

There's more to this picture of Washington, D.C. in early April than meets the eye. It's what you *don't* see that makes this scene so significant.

Paved streets in Washington is what this message is all about. Its purpose is to show you how *good* city streets or county roads can look after a hard winter... *before* the repair crews have gotten around. The reason you don't see gaping cracks, potholes and other types of roadway damage usually found after a long, hard winter is because over 600 miles of portland cement concrete street pavements in Washington (serving either as a concrete base for asphalt topping or conventional surface pavement) have been specified and built with welded wire fabric steel reinforcement.

Steel reinforced concrete pavements perform efficiently under constant stop-and-go rush hour conditions as well as under the hi-speed pounding of heavy thruway traffic. They last longer. They cost less to maintain because they have

far fewer joints and all cracks are held tightly together.

**Welded Wire Fabric adds 30% more strength to concrete pavement slabs.** This is achieved because the steel reinforcement distributes the load transfer and reduces stresses in the slab by about 30%, thus diminishing the pavement's tendency to develop cracks, and prevents the progressive opening of any cracks which do occur. Reinforced pavements provide a safe, smooth riding surface that lasts.

Today USS American Welded Wire Fabric is stronger than ever. Minimum tensile strength is now 75,000 psi. Minimum yield strength is 60,000 psi. A 100% machine-fabricated product—ready for immediate placement—it is available in weights, gauges and dimensions to your exact specifications. For more information, contact our nearest Sales Office, or write direct to American Steel and Wire, Room 1275, Rockefeller Building, Cleveland 13, Ohio.

USS and American are registered trademarks



Workers place sheet of 50-lb. welded wire fabric on a freshly poured concrete base which will later be topped with asphalt.

**American Steel and Wire  
Division of  
United States Steel**







Grade checker closely follows the Gurries machine with an offset for checking the grade. Accuracy of surface evenness within plus or minus 0.03 ft. was maintained—as required for the untreated base under California's new specifications.

Reversible auger skims off excess base material to one side for removal and reuse.



Automatic grade control is accomplished through triggering provided, by fingers which trace along the accurately positioned profile piano wire.



**T**he 7.7-mile segment of the San Diego Freeway near San Clemente was wired during construction—not for sound, but for evenness control of subgrade and base. This was part of in-use testing of a new single-pass base machine.

Guy F. Atkinson Company, the contractor, used a Gurries Automatic Road Builder in conjunction with slip-form paving equipment. This is a new machine that employs a tightly stretched, carefully positioned piano wire running along one side of the roadway to guide the height of the spreader blade as the machine is towed along.

The machine during its shakedown by western contractors reflects the search for more economical as well as accurate paving methods to meet evenness requirements in California freeway construction.

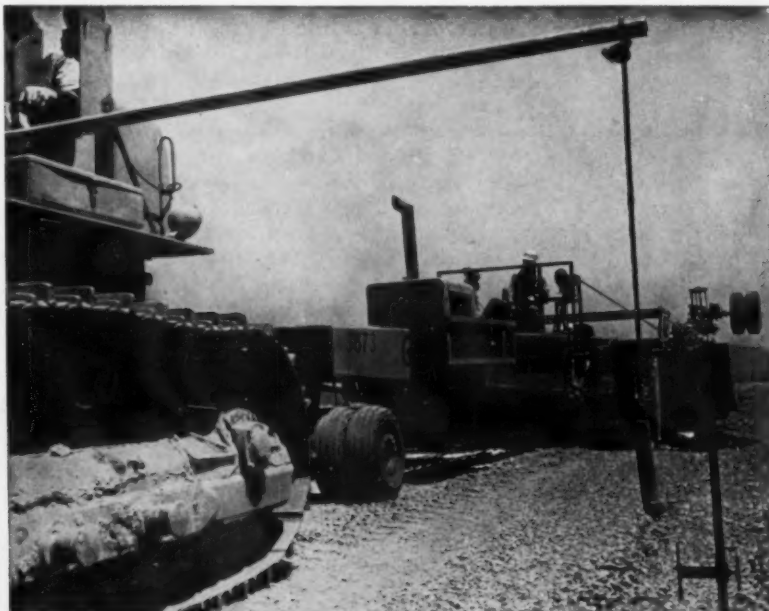
An Atkinson spokesman, in working out details for use of the new Gurries machine, noted that, "With increasing use of slip-form pavers and with tighter specifications on finishing the subbase, we're going to see more machines like the Gurries." California's specifications favor some such machine as the automatic one-pass base spreader. One of the indicated economies is elimination of multiple passes of motor graders.

Also some of the California Division of Highways engineers believe that multiple passes of a blade, in bringing a subbase to specific elevation and evenness, creates an unacceptable amount of segregation and/or degradation in base material.

As a word of explanation it should be pointed out that Atkinson's San Clemente job was awarded before the state's 1960 standard specifications went into effect. The Atkinson men although using the Gurries unit extensively could, and did, use motor graders for fine-grading wherever they felt it was economically advisable.

The base and subbase of the San Clemente portion

The tractor operator uses a beam plumb bob to hold the Gurries machine accurately on course.



## New Automatic Machine Fine-Grades Base Without Forms

New and much talked-about in California, the machine here described reflects the intensified search for better methods. Its challenging objective: to help meet freeway smoothness and elevation tolerances in subbase and base layers, particularly ahead of the formless paver—at low cost and with least blade manipulation in order to avoid segregation

Geared hand winch holding 1,000 ft. of 0.052 in. piano wire, to be tightened to 300 lb. tension.





The improved Gurries Automatic Road Builder (GARB-44) is designed to automatically maintain a preset blade height and cross slope in relation to a selected reference, planing a finish grade on roadbed from a rough grade. It is accurate to  $\frac{1}{8}$  inch in 13 feet of travel.



The D8 operator pulls alongside a grade stake which carries a cross-fall reading. This information he relays via an intercom to the Gurries operator.

of the San Diego Freeway were made up of a mixture of native and commercial material—first, 8 in. depth of select, then 4 in. of untreated base, and finally 4 in. of cement treated base. After an MC2 seal, a Rex slipform and Koehring Tribatch paver together laid the 8-in. concrete slab.

Eventually the Gurries unit will be used to strike off the subgrade untreated base, and the cement treated base. On the San Clemente job, Atkinson's personnel, in feeling their way with the unit, used it only for handling the 4-in. untreated base.

After state engineers set grade stakes bordering each roadway, the contractor's men drove steel stakes adjacent to these red tops to support cross arms on which the piano wire was strung. This is part of a kit made up by Gurries and includes, in addition to the adjustable cross arms and their stakes, .052 in. diam. piano wire and 1,000 ft. capacity hand winches for tightening the wire. The wire is anchored to a dead man at one end of a 1,000 ft. run, then tightened to 300 lb. of tension (6 in. elongation per 100 ft.). A grade checker next moved along the stakes, positioning the height of the taut wire to within 0.01 ft. in relation to the ad-

jacent red top. This he did by raising or lowering the cross arm on the steel stake, then tightening the set screw.

The piano wire thus became an accurate grade profile. The amount of transverse slope at each control stake was posted on a card near the wire, easily seen by the operator of the towing tractor.

Excess material from the machine's strike-off blade is worked to either side by a screw conveyor. Normally careful procedures for getting the proper amount of material on the grade is good enough for the grade preparation. The machine's screw conveyor can handle the discharge up to a 2 in. thick excess in a single pass under normal operating speeds. More excess than this requires another pass. Atkinson's men believe that by careful metering of material, they can get along without use of a grader.

The specification for the untreated course require that it be held to within 0.03 ft. of finish elevation. The Gurries did a good job of satisfying this requirement. With everything running smoothly, according to one of the grade foremen, it handled as

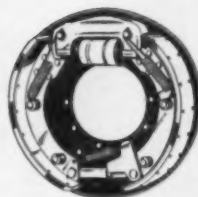
*Continued on page 75*



**NEW!**

## Self-adjusting brakes

now available on LW graders. They're standard equipment on all models. Operating principle is the same as on some 1961 passenger cars and trucks. You simply apply brakes while backing up — and brakes adjust automatically.



increase your  
work range  
with a

**POWER**  
*Flow*<sup>®</sup>  
**660**

Get the *most* out of your grader investment with the big torque-converter equipped LeTourneau-Westinghouse POWER-Flow 660. This 190-hp heavy weight can often replace 2 or more lighter graders and handle a much broader range of work than low-power models.

### Matches power to load automatically

POWER-Flow torque converter permits infinite power-speed ratios in 4 forward speed ranges, and 4 in reverse. Power is *automatically* adjusted for all blade loads, from lightest to extra-heavy. This means that every variation in grader work is handled at the most effective

power-speed ratio. Speed ranges adjust automatically through the complete range from 0.23 to 26 mph forward; 0.22 to 23 mph in reverse.

Accuracy of blade adjustment makes POWER-Flow 660 a precision, one-pass, finishing tool. Fraction-of-an-inch control sets blade for accurate work in high-speed finishing. And light finishing jobs are actually *better* handled by the POWER-Flow 660 — its weight and reserve horsepower minimize blade vibration.

### See versatility proved

Want to see for yourself what this all-purpose grader can do? Ask for a demonstration.

G-2328-G-1r



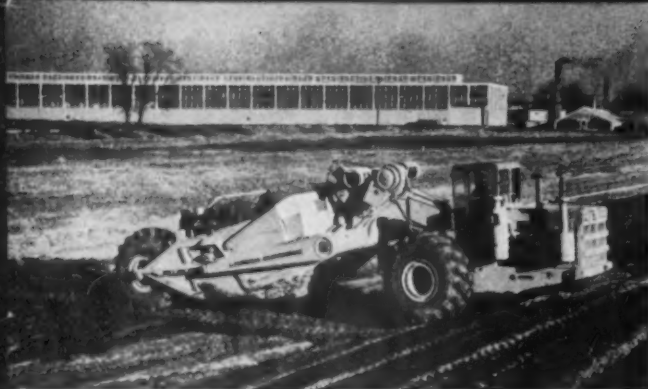
**LETOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS**

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

ROADS AND STREETS, September, 1961

... for more details circle 310 on enclosed return postal card



**"Keep moving . . . have little downtime,"** says Leonard "Len" Stahoski, Secretary of Stack Construction Co., Milwaukee, Wis. "We've run 'Pulls since 1950. They *do* what we want them to do . . . that's why we're LW all the way!" This LeTourneau-Westinghouse 290-hp V-Power C Tournapull® is fast all through the cycle because it has the best power-to-weight ratio in its class: 307 to 1. Accelerates to top-hauling speeds 20% faster than other scrapers in the "C" category.



**"Produce 25 to 30% more** than our older machines on half-mile cycles," reports James A. Christy, Superintendent for Booth and Olson, Sioux City, Iowa. Footing on this 594,000-yd highway project was often *"so soft* you couldn't run a grader on it". But Booth and Olson's 6 C 'Pulls kept production on schedule. LW power-transfer differential and kingpin electric power-steer "walk" Tournapulls out of wet, muddy going on cuts, haul roads, and fill areas that stops other scrapers.

## EARTHMOVING MEN WHO KNOW TELL YOU why C 'Pulls\* move more

**"Hooked-up in tandems, they're still fast,"** says Superintendent Bill Conners on a subdivision project at Fullerton, Calif., where Boeck Paving Company operated 2 C 'Pulls with tandem scrapers. In just 6½ hours, these two LW machines *moved 5000 pay yards!* Only LeTourneau-Westinghouse offers you a practical

way to use tandem scrapers for *double capacity* on every trip. LW's exclusive electric-control system sends working power *any* distance with *no* loss of efficiency. And, the ball-and-socket swivel-hitch permits 180° non-stop turns in area only 20 to 25% wider than with "singles". You back up, too, with no tendency to jackknife.





"Keep us ahead of schedule," comments Superintendent C. J. Bogue Jr. One of the V-Power "C's" — owned by John F. Buckner and Sons, Cleburne, Texas — gets heaped load on highway job near Blue Ridge. LW 20-yd Fullpak® scraper loads fast because its low, wide bowl lets dirt flow-in easily, almost horizontally, with only a 2° rise to "climb". Result: More of your prime-mover-and-pusher power is used for cutting and pulling... less is wasted merely lifting dirt.

## yards faster

"Plenty fast and really haul dirt," says W. C. Matthews, Superintendent for Frank C. Feutz Co., of Paris, Illinois, owner of two V-Power C 'Pulls. Operator Paul W. Knight adds, "This powerful scraper goes right through soft spots in 4th gear... has all the power you could ask for!"

\*Trademark CP-2425-DCJ-2



### Other profit-builders:



#### LW TOURNAPULLS

In addition to the 20-yd, 290-hp V-Power "C", other LW Tournapull-scrapers include: 29-yd, 430-hp "B", and 9-yd, 143-hp "D". Scrapers interchangeable with LW Rear-Dumps.



#### LW SPEEDPULL®

This 6-wheel prime-mover-scraper combination makes your long-haul jobs more profitable. 37.7 mph, 276 hp, 20 yd heaped capacity. 40 yd in tandem.



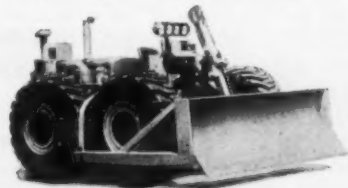
#### LW HAULPAKS®

Here's a hauler designed to earthmoving "specs", not automotive. 5 end-dump sizes 22 to 65 tons... up to 550 hp. 90-ton Haulpak bottom-dump also available.



#### LW GRADERS

7 sizes... there's one to fit your specific needs. 85 to 190 hp, including 2 torque-converter POWER-Flow® models.



#### LW TOURNATRACTOR®

Get more speed, mobility on tractor work with rubber-tired Tournatractor. 18.5 mph. 218 hp. Choice of electric or hydraulic blade control.

See LW Distributor for details.

**LeTOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS**

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit



... for more details circle 309 on enclosed return postal card



# Latest Findings On Water-Reducing Retarders for Concrete

The following is the synopsis of a detailed research report entitled, "A Symposium on Water-Reducing Retarders for Concrete," by Woodrow J. Halstead, Supervisory Chemist, and Bernard Chaiken, Chemist, Division of Physical Research, Bureau of Public Roads, Washington, D.C.; published in *Public Roads*, Vol. 31, No. 6, February, 1961. This issue also contains recommended specifications for retarders based on the research.

Within the past several years, admixtures to reduce water content and to retard set in portland cement concrete have come into prominent use in construction. With the recognition of benefits derived from and the increase in availability of commercial concrete retarders, the need for a specification for the acceptance and performance of all types of retarders has become great. Problems of acceptance and performance, however, confront the engineer, who is responsible for the selection and use of a satisfactory retarder, because of a lack of standard methods of testing retarders. It was believed that these problems would be greatly reduced by procedures for testing which would allow the engineer to make tests of the retarder to determine if it is acceptable and is uniform, batch-to-batch.

In an attempt to standardize testing methods for retarding admixtures, the Bureau of Public Roads in 1957 undertook an extensive investigation of the effects of commercial retarders on certain properties of portland cement concrete. A questionnaire was sent to all marketers of retarders known to the BPR with a request for samples and information. Of the samples received, 25 samples from 11 companies were chosen for testing. The other samples were considered not to meet the Bureau's conditions for inclusion in the testing program because they were either not essentially retarders or were not available commercially at the time of receipt.

The study of commercial retarders was conducted in two phases. First, chemical, ultraviolet, and infrared spectral analyses were made to determine the composition of each retarder. Second, a study was made of the performance of the retarders when used in concrete. The results of the two phases of investigation are included in this issue (*Public Roads*, February, 1961). Also included in this issue is a recommended specification for water-reducing retarders.

All materials were analyzed for specific physical properties and chemical composition. One objective of the chemical and other analyses was to develop procedures by which such materials could be identified quickly to provide a basis for obtaining the necessary assurance that the composition of a product is uniform from batch to batch. Another objective of the analysis was to establish the chemical composition of typical commercial products to show possible relationships between chemical composition and the performance of concrete prepared with the retarders.

The retarders (water retarding admixture) studied were classified, according to their chemical constituents, into three general chemical types. For the purposes of discussion they are referred to as lignosulfonates (salts of lignosulfonic acid), organic acids (organic acids of the hydroxylated carboxylic type or their salts), and carbohydrates (reducing and nonreducing sugars and starches).

## Water-Reducing Retarders for Concrete—Chemical and Spectral Analyses

This deals with the results obtained by the various analyses of the retarders and the relative merits of each method in characterizing the composition of the admixtures. Specific conclusions based on the data are:

1. Infrared spectral analysis offers the most promising means available for rapid identification and classification of retarders. This technique can be used to identify a material by obtaining a recorded spectral curve for each retarder. Less than 30 minutes is required for the analysis whereas a week is required by conventional methods of chemical analysis.

2. For specific construction projects, infrared analysis can be used to assure the purchaser of the uniformity of the admixture.

3. All three types of retarders could be distinguished from each other on the basis of infrared spectra. Although the lignosulfonate retarders had the same general infrared spectrum regardless of the type of salt present or the source of supply, in many instances, specific commercial lignosulfonates could be identified or differentiated by spectral differences caused by the manufacturing process or the presence of other ingredients. As to organic acids and carbohydrates, specific trade products could be distinguished from each other.

4. Ultraviolet spectra can also be used to identify lignosulfonate retarders and to obtain quantitative information as to their concentration. However, the spectra obtained are not as specific as are the infrared spectra.

5. Although useful in identifying retarder materials, conventional chemical analyses are time consuming and tedious and in many cases yield doubtful results. This was found to be especially true for the lignosulfonate and organic acid retarders.

#### Water-Reducing Retarders for Concrete—Physical Tests

This reports the data of the effects of commercial retarders on certain properties of portland cement concrete. The tests reported therein cover time of retardation, reduction of water, durability, and compressive and flexural strengths at various ages. The conclusions given below apply to concrete prepared with the cement and aggregates in the stated proportions and conditions of mixing, molding, curing, and testing used in this investigation.

1. To retard the setting time of concrete by  $2\frac{1}{2}$  to 3 hours, more retarder was required in some cases than that recommended by the manufacturer. This may have been due to the cement used in these tests, and indicates that acceptance tests of retarders should be made with the cement to be used in the proposed construction.

2. All retarders permitted some reduction in the

amount of water required to prepare concrete with a specific consistency. This reduction was over 5 percent for 23 of the 25 retarders tested.

3. The use of retarders improved the compressive strength of concrete when the air content was less than 8 percent. This applied to concrete having either the same cement content or the same water content as was used in concrete prepared without a retarder.

4. The flexural strength of concrete in general was not reduced by the use of retarders if the air content was less than 8 percent. When the cement content of the concrete containing the retarder was the same as that for concrete without a retarder, use of the retarder generally furnished higher flexural strength at both 7 and 28 days. When the two concretes had the same water content, those containing the retarder generally had higher flexural strength at 7 days, and about the same strength at 28 days.

5. As determined by freezing and thawing tests in the laboratory, the durability of concrete containing the retarder was in most cases less than that for concrete prepared without the retarder. However, the decrease in relative durability was significant in the case of only one retarder.

6. The contraction of concrete during continuous storage in laboratory air, or the expansion during continuous moist storage, was about the same for concrete prepared with or without a retarder.

7. An overdose of four times the normal amount of retarder generally caused a long delay in the hardening of the concrete. However, if the air content of this concrete was not over 8 percent, the compressive strength at an age of 28 days was usually greater than that of the concrete prepared without a retarder.

8. More retarder was usually required to retard the setting of concrete at a temperature of 90° F. than at 73° F. With few exceptions, the compressive strength of concrete prepared with a retarder at 90° F. was greater than that prepared at the same temperature without a retarder.

The data obtained from the study of the effects of retarders on concrete were used to prepare a specification for the acceptance and use of these retarders. It is of interest to note that of the 25 retarders used in the test, 16 met all of the requirements of the proposed specifications.

#### TENNESSEE ROAD BUILDERS ASSOCIATION CONDUCT PRESS TOUR

Seen during the Tennessee Road Builders Association's two-day public relations press tour of Interstate road construction, held in conjunction with National Highway Week. Accompanied by state highway department representatives, the newsmen in eight two-engine planes covered nearly 100 miles of construction. Seen here are Robert Jackson of Lambert Bros., contractors of Knoxville, Leslie Hart, the Association's executive secretary, Roy Idden of the Tennessee state highway department, and A. B. Long, TRBA's 1st vice president.







*This technician is just starting a test of soil density with Nuclear-Chicago's d/M-Gauge. Within minutes he will have an accurate measurement of the degree of soil compaction.*

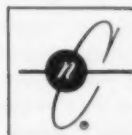
## ***This simple nuclear compaction test can save you \$23,000 a year***

A NATIONWIDE survey of 1,200 large road-building and earth-moving contractors revealed that compaction equipment dead-time, call-backs, and lost man-hours cost them an average of \$23,000 a year. They reported that they were reluctant to move equipment and crews down the job until inspectors had okayed compaction. (Copies of this survey are available on request.)

This sort of costly delay can be avoided by alert contractors who use Nuclear-Chicago's d/M-Gauge for on-the-spot checking of moisture and density in subgrades and embankments. This fast, accurate and proved test method can pay for itself on a single job by letting contractors move ahead of inspectors—confident that compaction will meet specifications.

More than 500 of Nuclear-Chicago's reliable, portable d/M-Gauge systems are now in use by soil

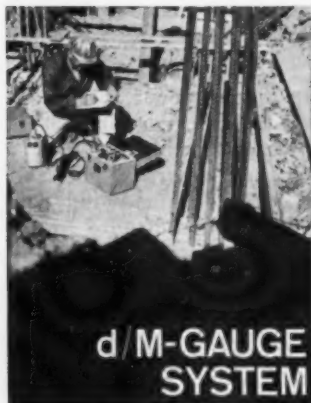
laboratories, state and federal highway authorities, engineers and contractors. Users report that results compare favorably with slow, cumbersome, conventional methods. They like being able to get accurate, non-destructive measurement on a great variety of soils and materials. They like the immediate, in-field readings that pay off in time and dollars saved. It will pay you to get all the facts now from Nuclear-Chicago, pioneers in the application of the nuclear method to compaction control. Use the coupon below to request full information or a demonstration.



***nuclear-chicago***  
CORPORATION

369 East Howard Avenue

Des Plaines, Illinois



***Nuclear-Chicago Corporation 369 East Howard Avenue Des Plaines, Illinois***

- ☐ Please send me a copy of the new application and specification booklet on the d/M-Gauge.
- ☐ Please get in touch with me to arrange a demonstration.

Name

Title

Company

Address

City

Zone

State



An electric cable via "fishing rod and reel" from a truck on the pavement operate this unique roadside mower.

## "Robot" Power Mower Covers Hard-to-Get-at Slopes

**M**ow a highway shoulder or slope by remote control? It may soon be possible. Two engineers with the South Carolina highway department have developed a "robot mower" that does just that. The engineers use a method akin to a fishing rod and reel mounted on a truck. It controls a mower to trim grass and cut heavy brush on steep roadside slopes and embankments.

This device is being patented and may soon be available to commercial interests.

When the highway department began its big Interstate program in 1956, the problem was spotlighted of maintaining the tremendous new rights-of-way. The standard procedure involves small tractors with mower blades. At best the operators can navigate only gentle inclines and, often, the tractors threaten to overturn, injuring the operator or damaging the equipment. Steep slopes also take expensive hand labor. In the southeast, a large

crew tackles the slopes with brush axes and swing blades. The task is long, tedious and often hazardous. W. K. Beckham, assistant state highway engineer, assigned mechanical engineer John G. Farmer the job of developing a machine to solve this problem.

Mr. Farmer working with mechanical engineer Rudisill D. Counts came up with the basic concept of a remotely controlled, self-propelled, rotary mower. The only type of power answering these requirements was electricity from a portable generating plant.

James E. Taylor and Roger W. Alewine, of the Lexington, S. C., state maintenance shop helped carry the idea to a workable conclusion, using discarded parts and materials wherever possible.

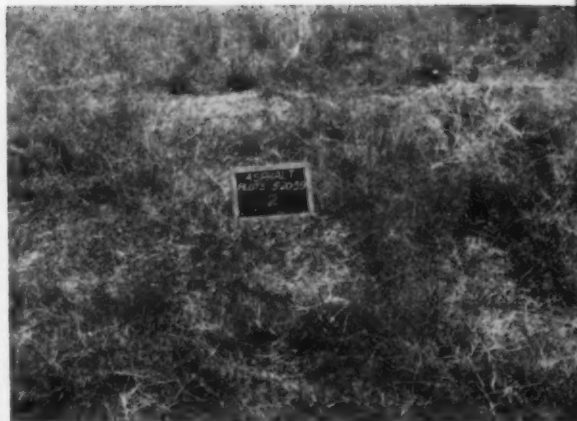
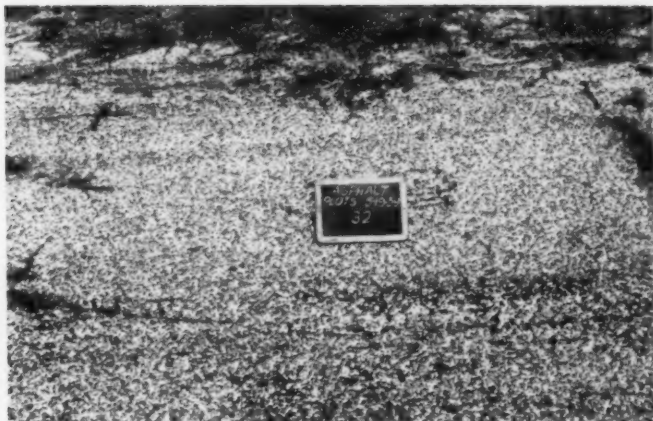
Traction and flotation ability had to be incorporated without sacrificing weight and height limitations. After many trials and errors the answer to this was found by providing power to four sets of

dual, pneumatic tired wheels. Steering is done by braking or reversing one side while powering the other.

The profile of the mower was made low, against overturning. Roll bars protect the mechanism "in case." An obsolete truck, with a good engine, was salvaged and a gasoline engine-driven generator was mounted on the truck bed. An operator's console was installed with three switches, one for each hand to control steering, and a foot pedal.

Control and power circuits to the mower were carried in a 200-ft. multiconductor cable fed from a 12-ft. boom on the truck. The cable is automatically stored and paid out from a reel controlled by the operator's foot switch.

The "rod and reel method" worked and slopes on Interstate 26 north of Columbia have subsequently been groomed by the invention.



Two stages of growths through the asphalt surface treatment in the California test.

## Under-Asphalt Herbicides Prove Out in Test

By P. E. Giguere and V. W. Woestemeyer

**T**he deterioration of an asphalt surface from unsightly weed growth is common occurrence, but one that can be prevented by proper use of available chemicals. This was proved in a test in California.

Weed growth up through the pavement may occur within weeks after the contractor is done. At other times the growth comes later as seeds and plant debris infiltrate the pavement, the growth contributing to the pavement's disruption and deterioration.

The problem is most familiar over parking lots, shoulder areas, median strips and other light-traffic areas. Awarding agencies often recommend a soil sterilant where the condition is anticipated to be critical. Some go farther and require soil treatments more widely for paving projects. Gillfillan's paper on weed control, Proceedings California Weed Conference, 1960, notes that the osmotic pressure from developing weeds may approach 1,500 psi—another way of saying that weeds-in-the-pavement can mean trouble.

The problem of selecting a weed sterilant isn't a simple one for this application. Besides needing to be low in cost and easily used, it should be effective with both annual and perennial broadleaves and grasses. It should be quick-acting on germinating seedling, and toxic to plant growth over a long period. It should be non-toxic and non-irritating to the human skin, and safe against igniting when in place. And of course harmless to the bituminous surface.

A pair of non-selective herbicides made by U.S. Borax & Chemical Corporation meets these specifications. Known as concentrated Borascu and Polybor-Chlorate, these materials have found wide application as pre-asphalt sterilants. The makers decided to make a comprehensive test of the herbicides, to develop better data on their use and on this problem in general.

The test was conducted in 1958 at a site near Santa Fe Springs,

California. The test area originally supported dense Bermuda grass, tumbleweed, pigweed and fireweed. The turf was "surface scaled" during the 1958 summer and the compacted soil cultivated to 6 in. depth to insure uniform distribution of seeds, roots and rhizomes.

Some 150 test plots were laid out, each 9' x 6', along an area crowned and ditched to a normal roadway cross-section. Fifteen different herbicides, including the two above-mentioned, were tried in different formulations, with normal, above-normal and below-normal rates of application. Suitable check or control plots (without treatment) were included in each strip of plots.

Right after treatment the plots were watered, applying 0.31 gal. per sq. yd. gradually. Knowing that under-asphalt chemicals often have been applied without water, the researchers included some Polybor-Chlorate plots which received no water other than the 1.5 gal. per 100 sq. ft. during chemical spray application.





Showing surface treatment in progress during the herbicide test site at Santa Fe Springs, California.

The various chemicals in the test were, for different plots, varied from highly soluble crystalline or powder forms to wettable powders, water miscible fluids, or granules designed for dry application. Each was applied dry, or in a water spray. Some of the more soluble materials were tried in both wet and dry form. The materials included all of the general soil sterilants in popular use, including selective ones meant for broadleaves, plus some experimental materials which had shown possibilities. Arsenicals were excluded.

Immediately the plots were covered with a single surface treatment consisting of 0.4 gal. per sq. yd. of 200/300 pen asphalt, applied hot, followed by cover stone. A 3-ton roller was used for compaction. Soils samples were taken in conjunction, for moisture checks.

In less than a week the new Bermuda grass shoots had penetrated the asphalt surface in all "check" plots and in many of the chemically treated plots. After six months there was a virgous growth on all check plots and most of the others. Deterioration was progressive, and at one year the growth on many plots was comparable to the original grass. Broadleaved weeds had, also, become established wherever "grass killers" were employed. Yet,

certain plots, notably those treated with Concentrated Borascu or Polybor-Chlorate, remained completely free of vegetation.

From the test the following generalizations could be made:

1. There were noticeable differences between chemicals and also between rates of water. Higher rates of Concentrated Borascu with 0.31 gal./100 sq. ft. of water were weed free; those with 0.12 gal. generally less effective.

2. All plots with Polybor-Chlorate and minimum water (0.12 gal.) gave effective vegetation control from the start. However, some weeks emerged in the unwatered Polybor-Chlorate plots before wetting occurred by rainfall.

The weed control ability of certain other soluble materials improved temporarily, as rainfall permeated the plots.

3. Some herbicides with high water solubilities and characteristic quick action were, initially, weed free. However, after a few months, the ones which decompose rapidly displayed a progressive decrease in weed control ability.

4. Systematic herbicides with very low water solubilities allowed rapid weed emergence and surface rupture.

5. Selective herbicides such as "grass killers" did not prevent rup-

ture by broadleaves, and vice versa. The two types did not furnish long-term control of susceptible species.

6. The materials such as Polybor-Chlorate and Concentrated Borascu possessed sufficient initial action and long-term persistence. When used according to current recommendations, the two products provided equivalent weed control.

The test spotlighted the importance of water in under-pavement herbicide use. Regardless of subgrade moisture or soil type, whenever dry chemicals are involved, enough water should be added to cause the disappearance of the dry chemical product from the soil surface. From this test and from experience records of users, U.S. Borax & Chemical Corporation has developed instructions to guide users, available on request.

In connection with the Santa Fe Springs tests, acknowledgment is made to Douglas Oil Co., of California, which donated and applied the asphalt; D. J. McNutt, their technical representative, who gave technical assistance; Paul McHenry, United Asphalt Company on surface treatment; Carl F. Lind, of The Asphalt Institute, who furnished technical information; and the Standard Oil Company of California, which granted use of the test-plot land.



*Texas Interstate 35E, Stemmons Freeway out of Dallas.*

## **Texas' 352 miles of Interstate awarded to CONCRETE promise big savings in upkeep!**

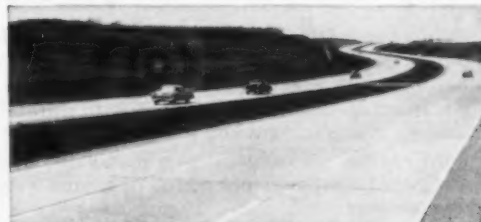


Across Texas, modern concrete highways grow in length—a public reminder of the skills and dedication of the engineers and builders who are creating them.

A solid future is built right into roads like these. Only concrete enables engineers to design pavements to last 50 years and more.

Concrete isn't flexible, so there are no "moving parts" in it to cause hidden wear. And even with the highest temperatures, it won't soften and ripple under traffic. Concrete actually grows stronger year by year.

All these advantages mean extra thrift for Texas as it builds with concrete: Exceptional pavement life . . . upkeep costs that run far less than for asphalt. It's for reasons like these that most Interstate mileage across the nation today is going to concrete.



*Texas Interstate 20, Dallas—Ft. Worth Turnpike.*

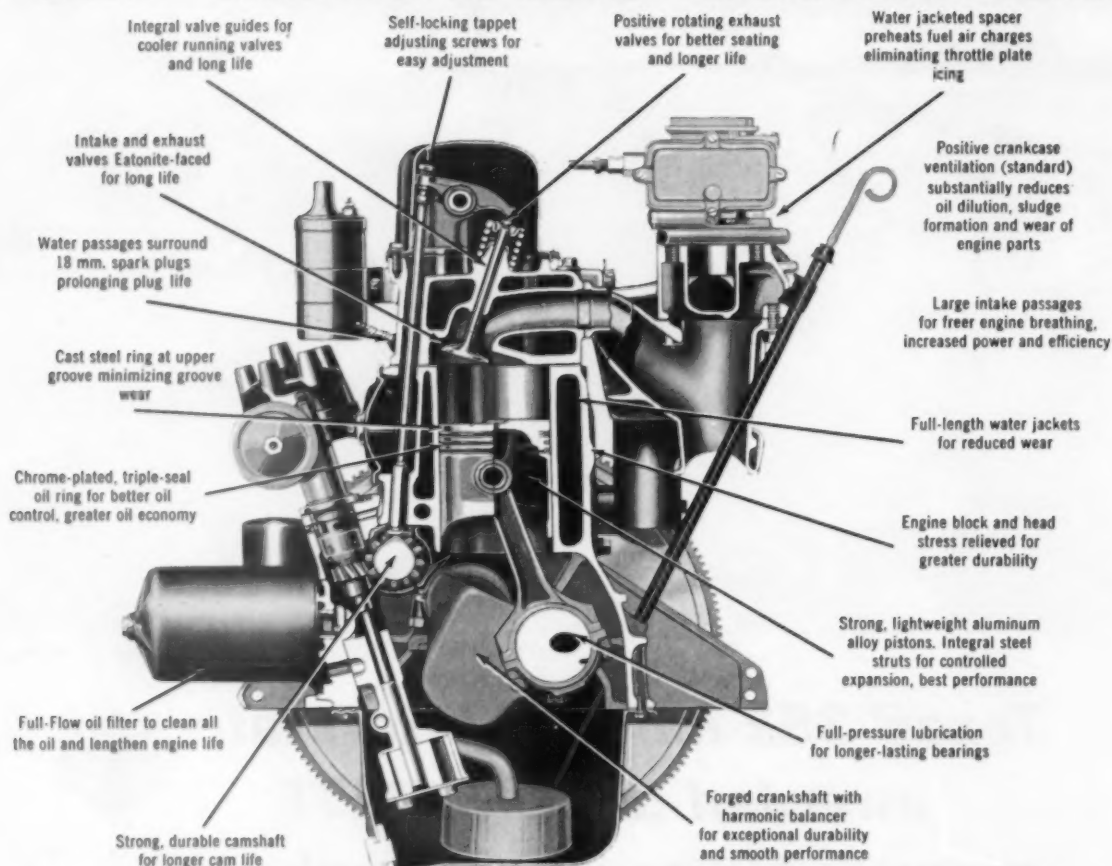
**38% maintenance saving with concrete, Texas' 31-year records show!**

Official Texas State Highway Department records give the facts: Since 1929, road maintenance costs per mile per year for concrete have averaged \$144.68; for asphalt, \$235.23. Texas' new concrete highways will do even better!

### **PORTLAND CEMENT ASSOCIATION**

*A national organization to improve and extend the uses of concrete*

# ALL-NEW 262 <sup>CUBIC</sup> <sub>INCH</sub> SIX JOINS FORD INDUSTRIAL ENGINE LINE



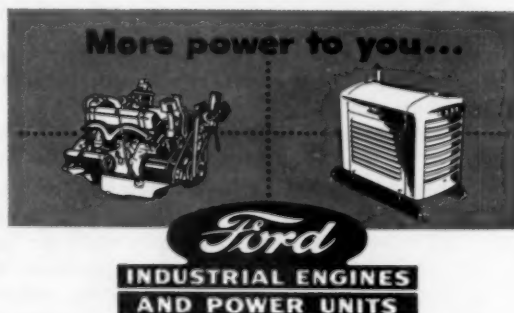
**Now . . . more six-cylinder power for your job! The durability of heavy-duty construction—the gas economy of six-cylinder design—they're all yours in one engine, the all-new Ford Big Six!**

Built to last with many heavy-duty features, the all-new Big Six teams dependable performance with durability and gas economy . . . advantages you'll find in *every* Ford engine!

All Ford engines are compact, overhead-valve design . . . delivering more horsepower per pound of engine weight than ever before possible!

Ford parts are as near to you as your Ford Dealer . . . and there's a nationwide network of Ford Industrial Products Dealers to provide you with fast, efficient service.

For help in choosing the *right* power for your job, write to the address shown below. You have 13 different engine displacements to choose from.



**INDUSTRIAL ENGINE DEPARTMENT, FORD DIVISION, FORD MOTOR CO., P.O. BOX 135, DEARBORN, MICH.**

West of Rockies write to:

FORD INDUSTRIAL ENGINE DEPT., P.O. BOX 6787, LOS ANGELES 22, CALIF.

FORD INDUSTRIAL ENGINE DEPT., P.O. BOX 1666, RICHMOND, CALIF.

. . . for more details circle 294 on enclosed return postal card



## NEW AUTOMATIC MACHINE FINE-GRADES BASE

*Continued from page 60*

much as 5,000 lin. ft. of untreated base material 36 ft. wide in one day.

### Undulations an Early Problem

A spokesman for another west coast contracting firm, which used the machine on a section of the Golden State Freeway in southern California, reported similar good production.

Occasional cyclic wave-like fluctuations of the struck grade were an initial annoyance. It was quickly determined that this was a product of the ultra-sensitive hydraulic control valve for raising and lowering the Road Builder above its two rear wheels. Personnel of both contracting firms, in describing the difficulty, felt that the problem was partly mechanical, partly the result of using material that was very hard to strike off. Changes in the patented valve control device have since gone a long way towards completely eliminating the trouble, one contractor is reportedly able to con-

tinuously strike off a finegrade base for an airport runway to within 0.005 ft. of specification.

Control of crossfall on the Atkinson job was efficiently and effectively handled by rigging an intercom between the Road Builder and its towing tractor. As the tractor drew abreast each crossfall card alongside the control wire, the operator relayed the reading to the Gurries operator who made a gradual and continual adjustment of the blade. The result was that crossfall came well within specified tolerances.

Much interest is centered in the new machine's potential place in laying cement-treated or soil-cement base layers on formless jobs. One contractor noted the need for such a machine that would help gear up today's already fast jobs, in keeping with batch plant facilities and hauling equipment designed to meet the particular needs of a high volume base building machine. Such a job would need more rollers and other finishing equipment to handle the cement treated material within the short time limit allowed.

### Colorado Studying Nuclear Test Correlation

The Colorado Department of Highways has completed its correlation studies of non-destructive methods for determining soil density and moisture content. This study pitted Nuclear-Chicago probes and scalers against the conventional testing methods both in the laboratory and under field conditions. A limited circulation report dated December, 1960, deals exhaustively with soils, subbase, and base course testing. Another study is under way to correlate nuclear testing with standard tests for hot-mixed asphaltic concrete pavement. The completed reports will be made available through Highway Research Board and AASHO papers.

This project, sponsored by the Bureau of Public Roads, was assigned to the Colorado Department of Highways, Materials Division, by R. E. Livingston, Planning and Research Engineer. In discussing the project, Livingston said that the chief points of the conclusions were:

1. Nuclear density and moisture testing is possible as well as practical for Colorado soils encountered in highway construction.
2. Nuclear testing is fast and convenient.

3. Contractor and highway department personnel acceptance has been enthusiastic.

4. Danger to operating personnel from exposure to radiation is negligible.

5. Only three days' training is required to prepare competent and interested sub-professional personnel to effectively operate the equipment, provided the person has a background in material testing.

---

### Dwyer to Manage 1963 Road Show

The CIMA Executive Committee and the Exposition Administrative Committee at their recent meeting in Cleveland, Ohio, employed Martin C. Dwyer, Jr., to manage the 1963 Construction Equipment Exposition and Road Show. The show will be held at the International Amphitheatre in Chicago, February 23, through March 1, 1963. Mr. Dwyer is presently assistant exposition director of the American Mining Congress, which recently staged the 1960 Mining Show in Las Vegas, Nevada.

Regarding the state's testing program for hot-mix correlation, Livingston said the main problem centered around the fact that some of the electronic equipment is heat sensitive. Studies are presently being conducted to develop a suitable insulating block having a density of 1.0. This block has to be able to shield the equipment from the heat of the hot-mix. At the same time its thickness must be variable so that the depth of radiation can be confined to the thickness of the mat. Studies so far show the depth of penetration of the radiation to be from 6 to 8 in. It is believed that radiation penetration into the base course will reflect data from both materials, and therefore be susceptible to error.

It can be definitely stated that the correlation tests to date are highly encouraging, with Livingston already visualizing the tremendous number of problems which nuclear testing can solve if it shows a tolerable correlation. In fact, the uniformity of results by nuclear testing makes one wonder whether or not the process might well be reversed—evaluate the standard test by their correlation with nuclear methods.

# Seven years of field experience prove it! **YOU CAN MAKE**



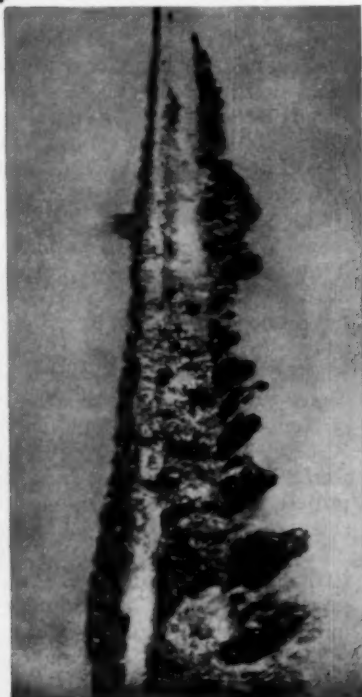
**BROKEN ABUTMENTS:** Restored stronger than new by brushing on polysulfide-epoxy adhesive to rejoin old concrete, or to bond fresh concrete to old.

**FASTENING TRAFFIC MARKERS.** Fixed to road surface with polysulfide epoxy adhesive alone, lane strips have stayed rigidly in place for long periods of time.



**FILLING RUTS AND DIPS.** Adhesive and aggregate mixed in ratio of 1 to 5 is spread and troweled right over depressed area. No digging down to roadbed or exposing steel reinforcements.

**SPALLED JOINTS:** Repaired in two hours by using polysulfide-epoxy mixed with aggregate as trowelable compound. Reduces tie-up time as much as 48 hours.



# LITTLE OF BIG REPAIRS

## ...with concrete adhesive based on THIOKOL liquid polysulfide polymer

Two chemicals in combination, THIOKOL liquid polysulfide polymer and epoxy resin, are providing one of the most useful engineering tools of our time.

Together, they produce a brushable, quick-cure adhesive used to join old or fresh concrete to old...to bond skid-proofing materials to roadways...to seal and protect surfaces against chemical attack and water seepage. The resultant bond is stronger than concrete itself, waterproof, acid resistant, and flexible enough to withstand repeated freeze-thaw cycles.

Repairs which heretofore required days of labor and road down-time, the use of heavy equipment and large crews of men are now being completed at a fraction of the cost in time, manpower, material and dollars. Serviceability of such repairs is, by actual experience, proving more satisfactory than those achieved by conventional methods.

Want to know more about this new engineering material? How it's used? Where it's used? The benefits and economies that accrue? Write to Thiokol for brochure CA-200.

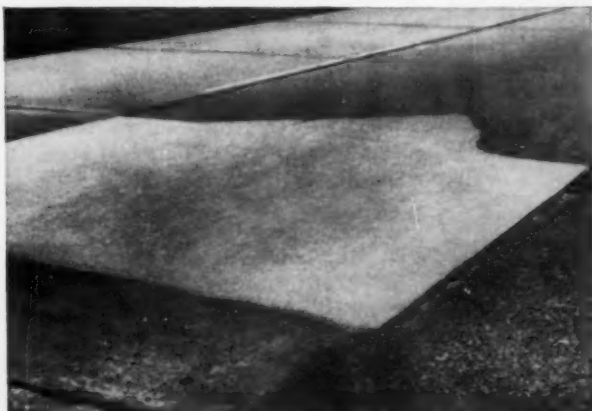


**POT HOLES:** Repaired to featheredge and ready for traffic in as little as three hours when patched with mortar mix of polysulfide-epoxy, sand or aggregate.



**HAIRLINE CRACKS:** Filled with polysulfide-epoxy. Adhesive film sprayed or brushed over surface seals out water, checks further deterioration.

**SCALED AREAS:** Repaired in only a few hours with adhesive containing THIOKOL liquid polysulfide polymer. Bonds new concrete to old. Watertight bond stronger than concrete itself.



... for more details circle 323 on enclosed return postal card

**ROADS AND STREETS, September, 1961**

## Thiokol®

**CHEMICAL CORPORATION**

**780 N. Clinton Ave., Trenton 7, N. J.**

In Canada: Naugatuck Chemicals Division,  
Dominion Rubber Company, Elmira, Ontario

Gentlemen: Please send me your Brochure  
CA-200 dealing with concrete adhesives  
applications and methods.

NAME \_\_\_\_\_

FIRM \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_

RS





Close-up of density probe - note use of sand for careful bedding to eliminate voids.

**Table 1**  
**Correlation of Moisture Probe**

Nuclear	Oven Dried
6.5	7.0
6.9	6.9
6.1	6.4
8.3	8.7
6.4	6.4

**Table 3**  
**Correlation of Density Probe—Asphaltic Hot Mix**

Nuclear	Steel Ring
140.0	140.4
140.6	140.8
139.6	138.4

**Table 2**  
**Correlation of Density Probe—Soils**

Nuclear	Actual Scale Weight	AASHTO
* 114.0 lb./cu. ft.	115.2	—
* 116.0	115.2	—
119.0	118.14	118.08

\*Same sample on two consecutive days.

## NUCLEAR TESTING EXPEDITING AIRPORT JOB

*Continued from page 44*

Dividing the test C.P.M. by the standard C.P.M. results in a ratio R. This ratio is then used as the basis for computing moisture and density. For ease of use and uniformity, the Denver men prepared a standard test recording form. Fig. 1 is a duplication of actual test results.

Two charts are used to convert R into an interpretation of the test results. Fig. 2 shows the density chart, Fig. 3 the moisture chart. It will be noted that the vertical scale is divided into values of R and the horizontal scale into either lb. per cu. ft. wet weight for density or H<sub>2</sub>O in lb. per cu. ft. for moisture.

Referring to Fig. 1, it will be noted that the two chart values are entered at the top of the middle section of the form.

Taking the ratio .444 from Fig. 1 and entering on Fig. 2, the wet weight is determined at 131.7 lb. per cu. ft. The ratio of 0.166 for moisture is entered in Fig. 3, and results in 6.0 lb. of water per cu. ft. Then, subtracting the water from the wet density gives the dry weight of 125.7 lb. per cu. ft. By slide rule 6.0 is divided by 125.7 to obtain the 4.8 percent moisture by dry weight. The final results are shown as maximum density, field density, percent of relative compaction, and required compaction.

The maximum weight for the various soils encountered has been previously determined by the F.A.A. T611 methods. When the test

weight was divided by the maximum weight for the soil being tested, this test resulted in 94.9 percent of theoretical density. The specifications required 90 percent, so this test was considerably above the requirements.

### Correlation with Other Methods

Denver engineers immediately after receiving the equipment took steps to correlate the results achieved by nuclear testing with those by F.A.A. T611 procedures. Other public agencies in the area have also observed the results and made correlation tests. Referring to Table 1, Denver's correlation shows that nuclear testing corresponds to the F.A.A. method within easily accepted tolerances. While both tests were performed under the same conditions, there is however no way to determine which of the two tests gives the correct information.

While Denver has not used the nuclear testing on asphalt pavement, it did run one correlation test, the results of which are shown in Table 2.

### Trend Of Opinion

In the final analysis, the acceptance of nuclear testing will depend on the opinion of contractors and engineers as to its reliability. For this reason, the opinions of the engineers and the contractor's supervisory personnel on this project

were solicited for evaluation.

Charles Loser, superintendent for Northwest Engineering, commented to the effect that so far, nuclear testing had caused no trouble. But the company's managers still wished to reserve judgment until experience had been gained under all conditions. Loser has definitely appreciated the speed of the testing, and felt that any delay in testing is a slowing factor in his high speed project.

Sam Ward, Denver's city engineer, commented enthusiastically in favor of nuclear testing. Ward was particularly impressed by the consistency of the results and the fact that nuclear testing is approximately three times as fast as the sand cone method. He pointed out that nuclear testing tends to eliminate the human discrepancies. Another factor which impressed Ward was that, regardless of its correlation with other tests, nuclear testing insured uniformity throughout the embankment. He thinks that uniformity of density has insured more uniformity and eliminated uneven settlement. Ward said that their maintenance troubles with the devices had been almost negligible. One tube had burned out, taking about two hours to secure and install a replacement. Ward is highly in favor of two scalers to insure continuous operation by eliminating the necessity for changing the cable and resetting the voltage.

Tom Foster, resident engineer

felt that one of the advantages of nuclear testing is the opportunity it offers the engineer for spot checking. The ease and quickness of operation on this job made it possible to quickly check any area which the inspector might suspect of being improperly compacted. Foster's reactions to nuclear testing were enthusiastically favorable.

William Smith, soils technician and operator of the equipment, had nothing but praise for nuclear testing. He said that only a little experience (along with a good soils background) is needed to operate the equipment. He had worked with little or no instruction, depending on Nuclear-Chicago literature, published reports, and attending conferences, as a basis for use of the equipment. He felt that the equipment was almost foolproof if the operator observed the rules.

#### Agreement With Contractor

The contract as awarded refers to F.A.A.'s standard specification which uses the F.A.A. T611 method for determining moisture and density. The engineers told the contractor of the contemplated purchase of nuclear equipment, and asked the company to consider the matter and voice any possible objection over use of the method. Northwestern Engineering's leaders said they would go along, however, they reserved final acceptance of the change until they had had considerable on-the-job experience. As of mid-June it appeared that nuclear testing was acceptable to the contractor.

#### Training Operators

Training an operator for the nuclear testing equipment seems to be no problem. It is undoubtedly advantageous to have an operator with a good soils background. However, using the equipment is so simple that any good technician could run it satisfactorily.

All operators of this type of equipment are required to be licensed by the Atomic Energy Commission. The procedure for licensing is simply the filling out of a form.

The operator is required to wear two radiation badges at all times he

is operating the equipment. One badge is worn at waist level and the other at ankle level. The Nuclear-Chicago Company handles the processing of the radiation badges. The badges are sent in periodically and the results returned to Denver. The reports on the badges worn by William Smith indicated that he had picked up no more radiation than would be normal in working under the same conditions without nuclear equipment.



Technician and density probe. Note radiation badges at waist and ankle level.

## Equipment Maintenance

### "Non-Weldable" Ripper Shanks Hardfaced

(From Stoodly Company's "Fusion Facts")

A unique method of applying hardfacing to "non-weldable" ripper shanks has been developed by Silver State Construction Company of Fallon, Nevada. Following the old adage of "there's more than one to skin a cat," they get around the problem by fabricating a protective sleeve, shaped to fit snugly on the lower part of the shank.

The side sections and the back panel of the sleeve are cut from 1/2 in. mild steel plate. The front panel, cut from 1 in. plow steel, is strength welded to the two side sections. This unit is then slipped in place and the back panel welded to the side sections, completely enclosing the lower part of the shank. Since it is made to fit exactly, it is not necessary to weld the sleeve to the "non-weldable" ripper shank.

Hardfacing is applied to the fitted sleeve—Stoodly 130, a tungsten carbide alloy semi-automatic wire providing maximum resistance to abrasion, on the front of the sleeve and also on the face of the regular replaceable ripper tooth; and Coated Tube Stoodite, a high-alloy manual electrode on the sides of the sleeve. The hard-faced sleeve acts as a protective shield around the ripper shank in the area where abrasion and impact are severe.

As wear occurs, the hardfacing is re-applied before the sleeve is damaged. Except for normal rebuilding and hardfacing of the ripper tooth, wear on the shank itself is negligible. Should the sleeve be allowed to wear to the point where it no longer serves its purpose, it is merely removed and a new sleeve installed.

ROADSIDE GRASSED AREAS along state highways in Rhode Island have been mowed recently by private contractors under an experimental setup. According to state public works director, John Paldi, this practice will continue.

# Bituminous Roads And Streets

Bituminous features appear on pages 80 through 91

## Views and Comments

By H. G. Nevitt

## Mixed Seals

THE USE of a thin layer of plant mixed material, usually an open graded special mix, in lieu of the conventional seal coat, is a practice which seems to be growing in popularity. Since the repair, replacement or improvement of the surface layer of the pavement represents a large item of the maintenance budget, and increasing traffic will accentuate the need for such action, it seems a pertinent topic for discussion.

As the writer and others have frequently pointed out in papers before the Asphalt Paving Technologists and elsewhere, such a replacement layer should perform a number of functions if the optimum surface as well as maximum returns from the expenditure are to be obtained. The best way to judge the benefits and disadvantages of the mixed seal, compared to the conventional approach, would then seem to be on the basis of these functions plus construction or economic benefits.

Provided a suitable priming operation is combined with the placement of the mixed seal there would seem to be little difference in sealing and strengthening the old pavement and providing a new wearing surface. The functional differences will mainly be in durability, non-skid resistance, drainage characteristics and roadway definition. These points will therefore be considered.

The conventional chip seal depends upon two factors for holding the aggregate particles in place. One is particle interlock, the other imbedment (up to half or two-thirds the height of the layer) in a hard, tough layer of asphalt. The former is gained by including

enough smaller (but not fine) particles in the cover aggregate to provide some keying, along with rolling (predominantly by pneumatics for best results). The imbedment is obtained by the use of the correct type and amount of asphalt. The result is, or should be if the proper construction practices and later traffic control are used, a resistant and durable surface, yet one quite open in the upper portion.

The mixed seal lacks the imbedment feature. It is true that the best practice as shown by experience is a somewhat rich mix considering the unit surface area of the aggregate used. But this is primarily to compensate for the relatively few points of contact in even a moderately open mix by increasing the individual contact areas, rather than to obtain an imbedding layer at the bottom. Of course such can be included in the prime coat, but then the construction procedure becomes that of the chip seal, with its control problems plus the added expense of coating the chips. Hence the mixed seal layer must depend mostly on interlock, with some help from the binder cohesion at the point of aggregate contact. Experience shows that to obtain sufficient strength—not merely initially, but over the normal life of a seal—a rougher angular aggregate as well as a considerably greater spread in aggregate gradation is desirable with mixed seals as compared to the conventional type. In fact the gradation selection and control needs considerable care, perhaps more than is usually given some agencies, if both effectiveness and durability are to be obtained.

Continued on page 82

### McCONNAUGHAY LICENSEES Operating K. E. McConnaughay Emulsified Asphalt Plants

#### ALABAMA

Vulcan Asphalt Refining Co., Cordova

#### COLORADO

Bituminous Materials & Supply Co.,  
4304 East 60th Ave., Denver

#### FLORIDA

E. A. Mariana—Emulsified Asphalt,  
Hooker's Point, Tampa

#### ILLINOIS

Emulsions, Inc., Lawrenceville

#### INDIANA

Bituminous Materials Co.,  
P. O. Box 1507, Terre Haute  
Wabash Valley Asphalt Co., Terre Haute  
Walsh & Kelly, R. R. No. 2, Gary  
Brookman Construction Co.,  
17th & Gharkey Sts., Muncie  
Fauber Construction Co., Lafayette  
Asphalt Materials & Construction, Inc.,  
4900 W. 86th St., Indianapolis  
Bituminous Materials Co.,  
E. Swihart St., Columbia City

#### IOWA

Bituminous Materials & Supply Co.,  
409 Fifth Street, West Des Moines  
Plants: Spirit Lake, LeMars, Carroll,  
Algona, Labig, Davenport

#### KENTUCKY

Emulsified Asphalt Co., Kuttawa

#### MAINE

Doherty and Swearingin Co.,  
53 Main St., Yarmouth

#### MASSACHUSETTS

James Huggins & Sons, Inc.,  
Medford & Commercial, Malden 48  
Koppers Co., Inc., Railroad Ave., Westfield

#### MICHIGAN

Bituminous Materials Co.,  
318 Atlantic St., Bay City  
Bituminous Materials Co., Escanaba  
Bituminous Materials Co.,  
416 S. Water St., Jackson

#### NEW JERSEY

Emulasta Products, Inc., Mount Holly

#### NEW YORK

Koppers Co., Inc., Utica  
Koppers Co., Inc., Knight Paving  
Products Dept., 1655 Union Rd., Gardenville  
Koppers Co., Inc., Knight Paving  
Products Dept., Vine Street, Ithaca  
Koppers Co., Inc., Knight Paving  
Products Dept., 1980 East Ave., Rochester 10  
Koppers Co., Inc., Knight Paving  
Products Dept., Watertown  
Koppers Co., Inc., Knight Paving  
Products Dept., Syracuse  
Albany Asphalt & Aggregates,  
75 State St., Albany  
Bimasco, Inc. (2 plants),  
312 Brook St., Bayside, L. I.

#### OHIO

C & C Emulsions, Van Wert

#### SOUTH CAROLINA

Seaco Incorporated,  
2700 Industrial Drive, Columbia

#### TENNESSEE

Asphalt Products Co., Inc.,  
Powell Ave., Nashville 4  
Road Materials, Inc.,  
3107 McClure Lane, S. E., Knoxville

#### TEXAS

Texas Emulsions, Inc.,  
8700 Balcones Trail, Austin

#### CANADA

T. J. Pounder & Co., Ltd.,  
1474 Wall St., Winnipeg, Man. (5 plants)

Eastern Representative:

John A. Dow,  
157 Church St., New Haven 10, Conn.

Export Representative:

William H. Schuelie  
440 E. 79th St., New York 21, N. Y.





## WHAT'S NEW



### ... IN EMULSIFIED ASPHALT PRODUCTS FROM McCONNAUGHAY?

**1** A new series of concentrated emulsions having an asphalt content above 70% in all grades.

**2** A new high-asphalt-content emulsified asphalt with the advantages of both cationic and anionic types effective with either acid or alkaline aggregates... solves problem of cleaning equipment and tanks.

**3** A complete series of cold-mix stock-pile paving materials including surface, binder, and base mixtures.

**4** A special skid-resistant stock-pile sand mixture for cold application to pavement surfaces for renewing the wearing surface and for increasing resistance to skidding when the pavement is wet.

**5** An improved winter stock-pile patching mixture capable of being used cold at temperatures down to 20° F.

**6** An improved summer stock-pile patching mixture capable of being used cold in the hottest extremes of summer temperatures.

The developments noted at left are continuing evidence of the successful research, both theoretical and practical, being conducted by the McConnaughay Central Laboratory (Lafayette, Indiana) in cooperation with McConnaughay licensees and their field services. For further information, call your nearest licensee (list on opposite page)...



or write

**K. E. McCONNAUGHAY** LAFAYETTE INDIANA

EMULSIFIED ASPHALT PLANTS AND PROCESSES

## NEVITT

*Continued from page 80*

This difference in the internal composition of the sealcoat layer, and the modification in the aggregate gradation that the mixed seal requires, are likely to have other results. Both types must have resistance to water action on the aggregate, but the conventional seal drains and dries much more easily so that the exposure severity is less. Both types aid drainage, but the conventional seal if well built is probably slightly better. The mixed seal, depending more upon interlock, is correspondingly more susceptible to peeling off if there is much flexibility in the pavement. It is also more susceptible to damage from chains in snow areas. And from the standpoint of durability the mixed seal, involving large film areas with easy access to air, will not resist weathering as will the asphalt imbedded layer of the chip seal.

From the standpoint of skid resistance both types with the right type — that is, nonpolishing — aggregate are reasonably effective, but the more balanced gradation means that the mixed seal will be less efficient than a chip seal using the same aggregate. Some mixed seals are sufficiently well graded to show little improvement in skid resistance over the ordinary mixed mat.

It is in visibility effects that the mixed seal is notably less desirable than a regular chip seal. The latter gives — or can give — a light colored surface delineated by black shoulders which greatly lessens driver eye fatigue, especially at night. The more uniform gradation and darker color prevent the mixed seal from giving the driver the maximum reflection from his own lights that is so desirable in the rain, while the chip seal eliminates much of the reflected glare from oncoming traffic. Where chip seals are well-enough designed and built to give maximum visibility effects they provide a far safer driving surface under such conditions.

It will be noted that in all the functional requirements the mixed seals are the same or inferior to a good chip seal. Why then are they used? Primarily, we believe, for two reasons. The first is that the

design and construction essentials for a really good chip seal are not widely appreciated — or, at least, those who have the knowledge aren't doing the work in many agencies. Likewise the inspection that is required to assure the effectiveness of this knowledge is often not supplied; many sealing jobs do not have inspection, or that of the required quality. The second is that usually it is far easier. And where chip seal know-how is lacking it is often cheaper, to place a good looking mixed seal than a chip seal. In fact one of the dangers of mixed seals is that inferior materials or construction may not be obvious for a year or so, whereas an inferior chip seal will disclose this fact anytime from six weeks to six months if not sooner. There are other pros and cons for mixed seals versus the regular chip seals, but in our view those pointed out here are the ones of importance.

If mixed seals are not as functionally effective, and often not as durable as the better jobs possible by conventional seal coating methods, and where both are constructed under routine and therefore presumably favorable conditions not appreciably cheaper — then should they be much used? We think they have a definite place. Where an organization is confronted with an unexpected amount of sealcoating for which neither engineers nor foremen with the required knowhow nor experienced crews are available, the mixed seal gives a way to get quite good results following more or less standard mixed mat procedures.

And there may be an occasional special situation where it offers such benefits or economies as to justify its lesser desirability from the functional standpoint. However this does not, in our views, justify passing up the benefits of the usual cheap seal for routine work. Sealcoating is a necessary and desirable maintenance operation, most highway agencies have enough miles under maintenance to warrant such trouble and expense as is involved in organizing to do good sealcoating, and for such routine work it seems difficult to justify resorting to the less desirable mixed seal despite the many miles of excellent work of this type to be seen.

It is interesting to note that no proponents of either method have come up with a clearcut answer to the question of what is the optimum size sealcoat aggregate, despite the thousands of miles sealcoated each year and the millions spent in doing this, often not too well. About a decade ago we pointed out the desirability of such a determination and suggested a rational approach towards making it. This is another instance of the fact that highway construction, use and expenditures have all progressed more rapidly than the technology or the research needed to keep pace with them.

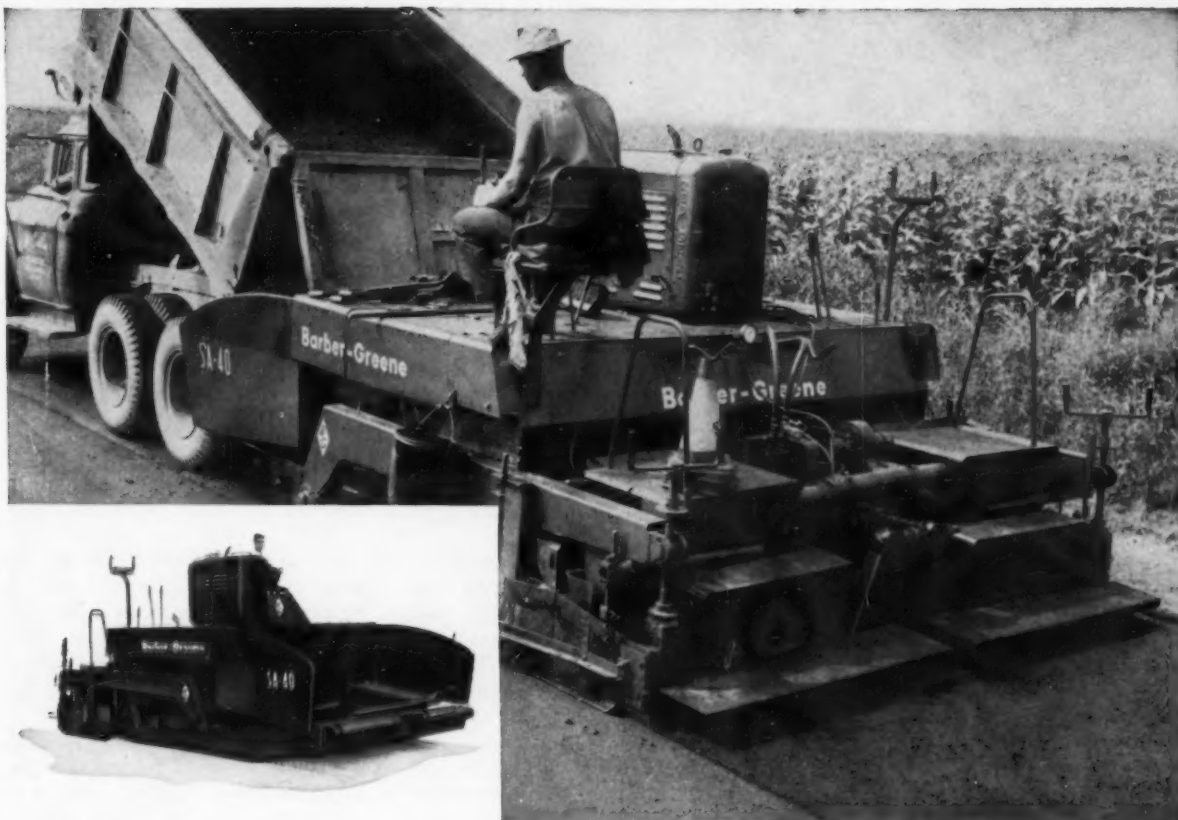
We hope this discussion has emphasized the point that sealcoating is a highly technical operation, requiring understanding of the engineering principles involved along with skill and judgement in applying them. While the usual chip seal makes somewhat greater demands in this respect than the mixed type both clearly need more attention than they receive in many areas. In our view this is one of the most promising fields in which highway agencies may get better results for less money.

## Recommended Test Boring Specification

The Test Boring Contractors Association has published a Recommended Standard Boring Specification for Cased Borings. This is designed to help standardize contract specification requirements in the Metropolitan area of the City of New York, as well as method of performing foundation test borings.

Member firms in seeking method standardization among professional engineers and architects, hope to provide greater uniformity and better quality of borings. Standardization of contract specification requirements will, they hope, eliminate misunderstanding as to the respective responsibilities of the boring contractor and the architect or engineer.

A copy of the Recommended Standard is available without charge from the Association at 11 West 42nd St., New York 36, New York.



## New Barber-Greene SA-40 Finisher

*...newest advance in asphalt paving equipment*

Barber-Greene's Model SA-40 is a new achievement in ease of operation and automatic features, combined with simple construction for greatest accessibility and ease of maintenance.

Its wide range of speeds from 12 fpm to over 4 mph with top speeds for both forward and reverse, together with its many other features assure greatest tonnage production at lowest cost.

#### OUTSTANDING FEATURES INCLUDE:

- **NEW EASE OF OPERATION** with joystick, power-assist steering.
- **HYDRAULICALLY SELF-DUMPING HOPPER.** Tunnel extends to rear of chassis for greatest capacity. Hopper gates controlled from screed platform.
- **HEAVY-DUTY LONGER LIFE SCREED** features hydraulic operation, high speed tamper that compacts before strike-off, improved automatic leveling, twin heaters.
- **AUTOMATIC FEEDER CONTROL** operates each pair of feeders and screws independently.
- **OSCILLATING PUSH ROLLERS** pick up trucks on-the-fly regardless of alignment.
- **SIMPLIFIED SERVICING** achieved through unitized construction and simple, efficient, accessible power train.

*World's No. 1 Manufacturer of Asphalt Paving Equipment*

*Representatives in Principal Cities of the World*

# Barber-Greene

Main Office and Plant **AURORA, ILLINOIS, U. S. A.**

Other Plants: DeKalb, Milwaukee, Detroit, Canada, England, Brazil, Australia



**CONVEYORS • LOADERS • DITCHERS • ASPHALT PAVING EQUIPMENT**

**ROADS AND STREETS, September, 1961**

*... for more details circle 281 on enclosed return postal card*



## Jet Runway Gets Fast Week-End Sealcoating

One Saturday this past July, while flight operations were at low ebb for the week, the 300 x 2-mile-long main jet runway at Pease Air Force Base, New Hampshire, was given an asphalt surface treatment. This runway at the SAC field at Portsmouth was constructed in 1954 and 1955, the central 9,560 ft. being asphalt concrete. This part of the runway along with heavily used asphaltic concrete taxiways has given excellent service. Inspection just before the sealing job showed the pavement to be even and dense of surface, the only maintenance need on the runway asphalt being some step to seal and rejuvenate the surface over areas that have not had the kneading action of wheel passages. The seal was considered more as a preventive of any serious oxidation rather than a corrective.

Various methods and types of treatment were considered by the Air Force Base maintenance personnel, including an asphalt emulsion slurry and a coal tar pitch emulsion. An ordinary asphalt seal coat and chip or sand cover was not favored at first because of the impression that this would leave particles to whip off for a period following the application. The objection seemed to center chiefly in the not-always satisfactory control of the aggregate cover and embedment in the seal.

However on advice that improved equipment was available, and that sealing could be done as a high-speed week-end operation, the project specifications were writ-

ten to call for a sealcoat and sand. Sealing of 367,000 sq. yd. of runway and taxiway along with certain minor surface repair work set up in this maintenance contract. The job was awarded to Bell & Flynn, Inc., of Stratham, New Hampshire.

A 20-day completion period had originally been set up for this job, but with the speed possible in sealing, two successive weekends were agreed on as the basis for the schedule.

RC-2 as cutback was specified consisting of 80-100 penetration asphalt thinned with 28 to 32 percent heavy naptha and applied at 175 deg. F. Sand was specified for cover, with gradation between 1/2 in. and No. 100 mesh.

Bell & Flynn settled on the use of a Flaherty chip spreader, with 14 ft. instead of the usual 10 to 13 ft. width of spreading box, this machine being one of the principal reasons apparently for the official decision to apply an ordinary seal. This machine with a 525 ft. per minute travel was able to keep up easily with the firm's distributor schedule, and to apply cover material to a degree or control accuracy that satisfied the engineers.

The first sealing was done on one of the short but intensively used taxiways between apron and runway. Some experimenting was done as this first work went along. Using alternating Etnyre FX500 4,500-gal. distributors with Model TUC full circulating spraybars, a cover of .12 gal. per sq. yd. was first tried on taxiway areas with cover as high as 12 lb. per sq. yd. of sand. The

subsequent immediate use of this area by planes indicated that a lighter application would be best, and a .10 gal. application with first 10 lb. then reducing to .09 or .10 lb. of sand was used on the runway.

Treatment of the runway area was done in 15-ft. spraybar runs, going the entire 9,560 ft. with each swath and covering half the 300 ft. width on the first scheduled day, Saturday, July 29. Preliminary work began at 7:30 am., the Etnyre tankers of John L. Hudson, Inc., being on hand with heat kept up during the previous night. (Asphalt came from a Mobil refinery.) By 2 pm. with about 5 1/2 hours of actual distributor operating time and 19 miles of spraybar action half runway width totaling 318,550 sq. yd. had been treated and the rolling and broom dragging were well toward completion.

Although the plan had been for the other half of the runway to be done the following weekend, the very rapid progress encouraged thoughts of going ahead and sealing the other half the next day, Sunday, July 30. A light rain shower which came along suddenly on Saturday afternoon, however, stopped all further rolling and dragging for a time.

As it was, the first half was rolled out, dragged and excess sand picked up as soon as a few hours of sun had dried out the sand, and the remaining half of the job sealed the next day.

The sweeping and pickup which completed the job were done with



Two Etnyre 4,500-gal. distributors with full-circulating spray bars, working alternately, covered approximately half of the 9,560' x 300' runway area on Saturday by 2pm, and finished the job the next day.

Making a positively controlled sand cover spread, the Flaherty spreader traveled at 525 ft. per minute, easily keeping up with the distributor runs.





Dragging with wire-brush drags was done usually with two towed in echelon after a short wait for the cutback asphalt to begin stiffening.



An Etnyre over-road tanker in the John L. Hudson, Inc., fleet, refilling one of Bell & Flynn's distributors for the runway coverage.



One of Bell & Flynn's Tampo self-propelled pneumatic rollers being used to roll and re-roll the sand until it was thoroughly embedded in the asphalt.

a machine which has recently put in its appearance in the Flaherty line: the Broom-Master power broom. This machine made a succession of passes working from the centerline to the edge. The power broom worked into the night rolling the little excess sand over to the side of the runway where it was picked up with a pick-up sweeper. The machine took 10 minutes to make an 8-ft. swath the length of the runway. Perhaps 3 percent of the sand cover was thus picked up.

The next morning, Sunday, at 7:30 the other half of the runway width operation was started. At 12 o'clock noon the entire runway had been sprayed and covered; the decrease of time on the second day was due to the dump truck operators becoming more familiar with dumping into the Flaherty spreader. They were dumping on the run. The actual picking up of the sand was completed by 7 am. Monday and the runway was open for traffic.

The specifications required thorough rolling of the sand cover beginning immediately behind the spreader, using rubber-tired rollers. Three such rollers were employed consisting of a Tampo SP 111 eleven-wheel unit, a Tampo SP 91 nine-wheel and a Bros nine-wheel machine.

Also in accordance with specifications two steel-brush drags were taken over the surface to help work in any loose sand particles and produce a more uniform carpet. The specifications gave the contractor considerable leeway as to the time for beginning the dragging. This interval was reduced to an hour or less, and during much of the first Saturday morning's work two drags towed in echelon by pickup trucks worked back and forth in a 15-ft. strip either one or two strips back of the distributor progress. A minor amount of asphalt was picked up by excess sand that never got embedded, but inspection following final brooming showed a well-knit sand-asphalt coat of good uniformity.

The engineers and the contractor's men agreed, all in all, that thorough rolling and broom dragging were the keys to a good job, once the proper amounts of asphalt and sand had been applied. Dragging was done transversely at the last.



Excess sand was worked to the runway edge with a new Flaherty Broom-Master self-propelled sweeper, where it was picked up and removed.



Bell & Flynn's contract totaled \$58,125 for both sealing, miscellaneous repair work and painting runway. The sealing job costs according to the contractor totaled about .09 per sq. yd. This figure takes into consideration the fact that all personnel were paid time-and-a-half on Saturday and double-time for Sunday work.

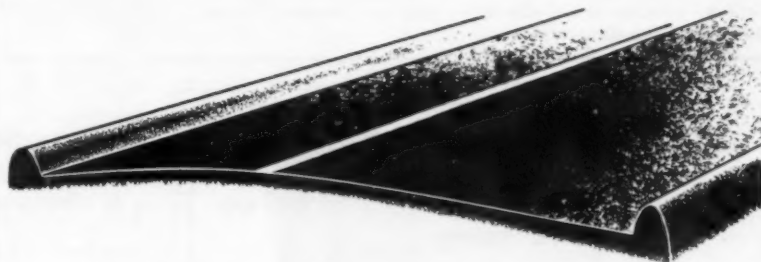
The Air Force personnel immediately put the new seal to the test, with take-offs on the Monday following the weekend job. The first planes landing made scuff marks but without evidence of tearing away any appreciable amount of asphalt or sand.

Pease Air Force Base, at Portsmouth, N.H., is headquarters for the 817th Combat Support Group (SAC); Brig. Gen. A. J. Beck, Commander 817th Air Division; Col. James M. Keck, Group Commander.

### A. M. Nash To Systems Analysis Post

The California Division of Highways has appointed one of its veteran career men, A. M. Nash, to an activity which will be given special emphasis at the department's headquarters. Nash, who has been district engineer at San Luis Obispo, and with the division for 41 years, will have the title of Systems Research Engineer in a state-wide study of engineering costs. The study covers engineering productivity and uniformity of engineering methods as they relate particularly to the division's planning and construction work. The project will take 12 to 18 months.

## Get more durable asphaltic curbs and gutters at less cost with **GILSAPAVE P-800**



The desirability of using low penetration asphaltic cements in the construction of curbs, parking-lot paving and "stop-and-go" sections of highways has been demonstrated by extensive research. Tests conducted by The Asphalt Institute show that decreased penetration can be easily and effectively achieved by adding GILSAPAVE P-800 to a paving mix containing a penetration asphalt cement. The result is an improved mix possessing greater stability.

GILSAPAVE P-800 is a special preparation of pulverized Gilsonite. In "hot-mix" plant operations P-800 may either be stirred into the hot asphalt cement or mixed directly with the hot aggregate prior to the addition of the asphalt cement. As little as 4 lbs. of GILSAPAVE P-800 per ton of mix will modify an 85-100 penetration asphalt cement to the optimum of 50-70 penetration desired for asphalt curbs and gutters.

Due to its very low penetration, P-800 is superior as an additive to pulverized asphalts and will result in a lower price to the customer. It will also produce an asphalt of superior ductility.

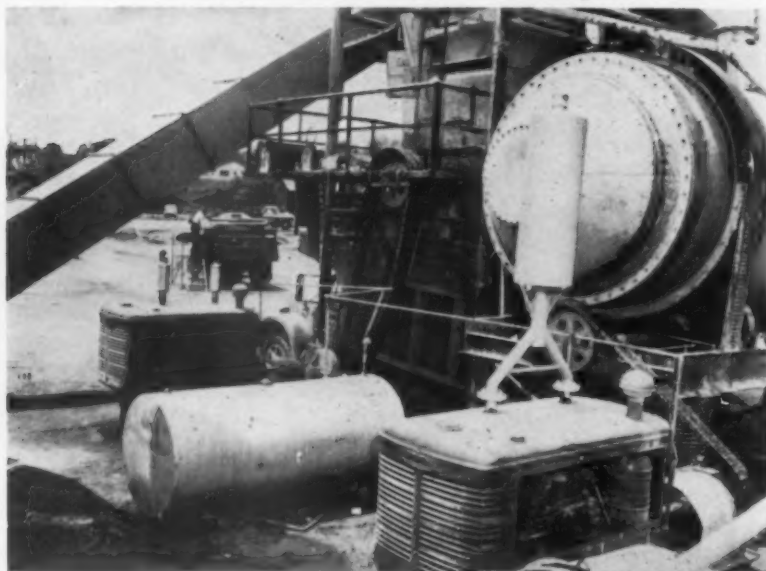
To learn more about the many advantages of GILSAPAVE P-800 call or write American Gilsonite Company, Municipal Airport P. O. Box 15, Salt Lake City, Utah. Telephone DAVis 8-0311.

## **GILSAPAVE P-800**

A PRODUCT OF AMERICAN GILSONITE COMPANY

(AFFILIATE OF BARBER OIL CORP. & STANDARD OIL CO. OF CALIFORNIA)

## Veteran Diesels Still Working



More than one-half million tons of bituminous mix has been produced at Kelley and Meyer Company's plant, Youngstown, Ohio, through power furnished by these two International UD-18 diesel engines. The brace of UD-18s and a third not shown in photo have been on the job for 17 years and have required only normal maintenance. One of the engines powers the mixer, hot elevator and screen; another drives the dryer and raw material elevator, while the third is hooked to the dust collector.

CAUSTIC CLEANING COMPOUNDS, when used properly, effectively remove grease, dirt, paint and gasket remnants from equipment parts. But—say service men of International Harvester's construction equipment division—these compounds may cause considerable damage to certain materials.

Particularly sensitive to highly-concentrated caustic cleaners are aluminum, rubber, fiber, sintered bronze and bonding agents. Various trade names are used for these cleaners, but the majority are based on the same active agent—sodium hydroxide. Most steam jenny compounds also contain this agent.

Many engine, torque converter and automatic transmission parts are especially sensitive to harsh cleaning agents. It is recommended that pistons and roller bushings (aluminum), converter elements (aluminum), clutch plates (bronze or composition-faced), rubber seals, gaskets, brake rotors (aluminum), brake bands, valve bodies (aluminum), oil transfer plates (aluminum) and parts of similar materials always be cleaned with petroleum solvents.



## TARCO Dump Body HOPPERS for Straight De-icing Salts

"Watchman" Hoppers have no moving parts. Bulk de-icing salts flow by gravity into the spreader. Travel and spread with the dump body in the normal "down" position.

There are two sizes for dump bodies: 3 or 5 cu. yd. ... enough salt for 25 miles. The "Scotchman" spreader used is a standard unit equipped with a Type V-3 Electric Cab Control which provides for one man operation. Install or remove the "Watchman"- "Scotchman" combination in less than 20 minutes.

See your "Scotchman" Dealer for liberal trade-in allowances.

**TARRANT MFG. CO.**

25 Jumel Place, Saratoga Springs, N. Y.

## Institute Studying Salts on Asphalt Paving

A laboratory investigation to determine the effects, if any, of de-icing salts on asphalt pavements was launched at College Park, Maryland by The Asphalt Institute.

"Extensive observations of asphalt pavements in service which have been exposed to de-icing salts for many years indicate that we have no problem in this area," said John M. Griffith, Engineer of Research at the Institute. "However, we lack comprehensive experimental data and documentary evidence to confirm these field observations. The purpose of this program is to begin filling this void in the literature of asphalt technology."

The Institute's study will cover about a year, simulating field exposure of asphalt pavements to repeated wetting with de-icing salt solutions. Initial studies have been limited to two dense-grade mixes having different types of coarse aggregate—one a limestone and the other a glacial gravel, both used in combination with a natural quartz sand fine aggregate and a commercial limestone dust mineral filler.

TRAFFIC VOLUMES jump quickly when connected segments of an expressway are opened up. Sections of Interstate 94 crossing Michigan from Detroit to the Lake Michigan shore have been completed and today 203 miles are open—a record length of interstate freeway. Traffic has gained nearly 25 per cent in recent months, now averaging 12,800 vehicles a day.

... for more details circle 327 on enclosed return postal card

## NBCA Releases Study Reports On Mix Moisture, Riding Quality

The first reports to emanate from separate research studies of "the allowable moisture in hot-mix bituminous paving mixtures" and "improved riding quality," have been released by the National Bituminous Concrete Association. This release followed NBCA's recent midyear business meeting at French Lick, Ind.

The two studies are a part of NBCA's 10-point 1½-year-old national research effort designed to promote quality bituminous pavements. In the first report on allowable moisture in hot-mix (Publication QIP 37), NBCA has sought to verify the postulation that significant amounts of moisture are present in pavements at all times. This holds that drying below this moisture content is uneconomical, pro-

vided adequate coating can be obtained and there is no trouble from "soupy" mixes. The report showed that significant amounts of moisture were present in the majority of pavement samples tested. Future work being planned consists of a laboratory study of the gradation and aggregate types which are conducive to "soupy" mixes and the stimulation of field test sections with pavements deliberately placed at a range of moisture contents.

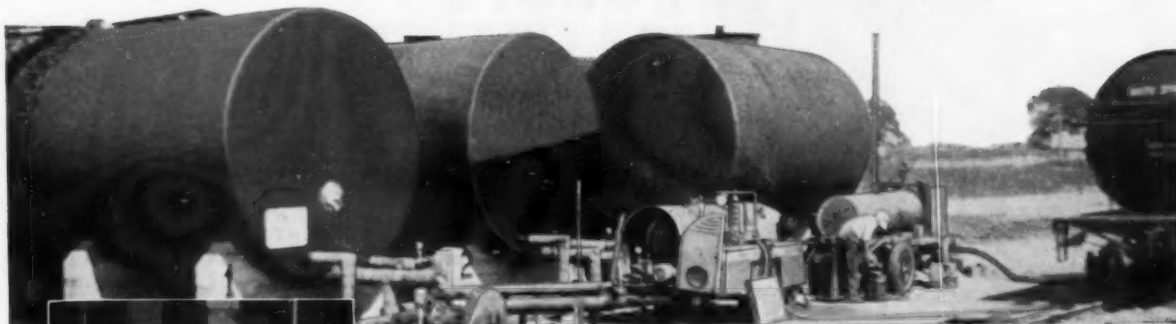
Under the research phase on "improved riding quality," the long-range objective is to stimulate the development and acceptance of methods of laying hot-mix pavement to predetermined profiles. The initial report announced here seeks to review existing methods,

or those in the development stage, and to suggest desirable "Characteristics of Machines to Lay Hot-Mix Bituminous Pavement to Predetermined Profiles" (Publication QIP-36).

Both the above reports are available upon written request to the National Bituminous Concrete Association, 1145 - 19th St., N.W., Washington 6, D.C.

The NBCA has also recently announced four new research studies oriented more directly to the bituminous contractor's problems: (1) a study of mixing times, (2) training aids, (3) a study of proper and economical ways to make joints, and (4) a study of means to obtain a dense surface in late-season work.

### "For the first time . . . all the hot asphalt we need — when and where we need it"



#### Cleaver-Brooks heaters keep 90,000 gallons on tap for Waupaca County (Wisconsin) Highway Department

Mr. Fred Grunwald, Highway Commissioner of Waupaca County, relies on two Cleaver-Brooks heaters to keep his asphalt road work flowing smoothly.

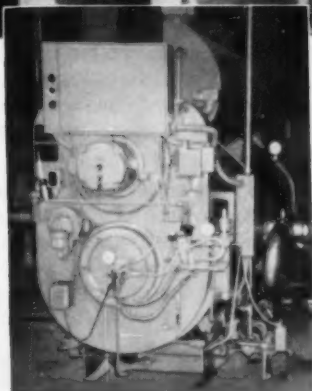
One, a Peak Temp heater rated at 2,000,000 Btu, heats 90,000 gallons of asphalt in seven tanks . . . keeps all grades of asphalt, from medium cure 0 to asphalt cement, hot and job-ready on a minute's notice.

The other, a PSM-50 portable steamer, raises tankcar loads to pumpable temperatures for unloading.

Mr. Grunwald reports: "With this

equipment, we have asphalt at the proper temperature — all we need, any time we want it."

For more information, write to Cleaver-Brooks, Dept. K, 395 E. Keefe Ave., Milwaukee 12, Wisconsin.



**Cleaver  Brooks**  
ORIGINATOR AND LARGEST PRODUCER  
OF PACKAGED BOILERS



#### PROBLEM:

The owner of a small close corporation, age 55, desires to withdraw a sufficient amount from his company's earnings during the next ten years to create a fund with which to retire. He feels that he can safely withdraw as much as \$30,000 a year before taxes.\*

#### ONLY TWO PLANS ARE AVAILABLE

##### PLAN A

Withdraw as much as possible of the \$30,000, as additional income for each of the next ten years.

##### PLAN B

Create a qualified Pension Plan for his staff with himself as a participant.

PLAN B YIELDS TWICE AS MUCH

#### TAX RESULT

From the earnings of the corporation \$30,000.  
52% tax bracket 15,600.  
Left after taxes \$14,400.

In order to withdraw the \$14,400, it must be declared as additional salary.

50% personal income tax bracket \$ 7,200

Maximum amount possible to withdraw \$ 7,200

Result at end of 10 years

Maximum amount possible to accumulate in a Fund \$72,000.

Out of the total contribution of \$30,000, to fund the Pension Plan, an amount of \$15,000, is deposited to the owner's account.

a) There is no tax on the \$30,000, as it is written off as a corporate deduction.

b) The money deposited each year is not reported as taxable income for the owner and other participants.

Result at end of 10 years

Amount accumulated to owner's credit in Fund \$150,000.

Owner's total cash under Plan: B	\$150,000.
A	72,000.
OWNER'S GAIN UNDER PLAN B	\$ 78,000.

\*The same idea applies to companies and owners in lower tax bracket.

How a pension plan can be profitable to owners as well as employees, compared with a bonus plan.

## PENSION PLAN

Continued from page 45

to your business that their leaving would create a serious loss? Probably not. Some may be younger employees who are merely gaining

experience. Others may be employed on a temporary basis. In any event, the plan should offer extra incentives to those who mean the most to the company. You can set your eligibility rules as tight as

Internal Revenue will permit for a tax deductible plan. The fewer persons you take in, the lower your cost.

So I suggest that you set the minimum age for participants at 30. Next, establish that employees must have several years of service (you can go as high as five) before they are enrolled in the plan. Finally, keep your maximum age low. You can go as low as 55, and the closer you get to this figure, the lower your cost. But don't shut out any of the top men—or yourself. Take a look at the ages of the persons you want included and use the age of the oldest person in that group.

Your next saving relates to the amount of benefit you select. Some contracting firms prefer to start at a low annual pension figure—say 30 or 25 percent of a participant's salary—with the idea of increasing benefits at some later date. This is one way to save. Another is to tie in your benefits with Social Security. In other words, specify that the base amount of the pension will be provided by the participant's Social Security benefits. Your plan will simply make up the difference. This reduces the cost, and protects against any increases in Social Security costs in future years.

There is one more saving that can cut a large chunk off the price tag of installing a plan. Perhaps you've noticed, in the plans you have already examined, an initial payment for something called "past service." If so, you will recall this payment was a staggering amount.

I suggest that you completely eliminate this payment. This won't win me any popularity polls among pension salesmen, because it cuts into their commission. But it's certainly more desirable for you to have a plan which minimizes "past service" than to have no plan at all!

What is "past service"? It is a way of rewarding loyal employees by taking care of the back years they

## TARCO "Arcrite" Spreader



—a gasoline engine driven, centrifugal disc spreader for dump truck tailgate mounting to spread salt, sand, cinders for ice and snow control; or sand and chips for sealcoating.

**Special Features:** 1. Extra heavy construction to take abuse; 2. Adjustable to tailgate in 3 directions—no material chute required; 3. Has vertical shaft bearing support; 4. Small storage space—in upright position; 5. NO-LOAD Engine Starting—for quick, easy start and longer engine life.

See your Tarco Dealer or write for details.

## TARRANT MFG. CO.

25 Jumel Place, Saratoga Springs, N. Y.

... for more details circle 328 on enclosed return postal card

have been on the payroll list. I don't say this is wrong—if you can afford it. But there is a less expensive way to do it. Simply add a certain amount to these persons' basic pension benefit—say 1/4 of 1 percent—for each year of service. This gives the 10-year man a definite advantage over the 5-year employee, yet costs practically nothing extra.

One final point: the value of your plan is directly related to how well you "sell" the plan to your people when you install it. It is well worthwhile to spend a little time putting your plan into simple, layman's language which employees can understand and appreciate. Better still, have each participant sit down, individually, with someone who really knows the plan (preferably the person who designed it). See that the employee realizes its importance. Let him grasp the fact that every dollar he makes or saves for the company also benefits him.

These are some of the elements in devising a pension plan that your company may well find to be an excellent investment.

A second article by Mr. Kelly will give actual case histories in the industry. A third article will answer questions asked by readers. Write: The Editor, Roads and Streets, 22 West Maple Street, Chicago 10, Illinois.

### Raveling of Asphalt Concrete Being Studied

A research study, "Raveling of Asphaltic Concrete", is announced by Charles R. Foster, Coordinator of Research of the National Bituminous Concrete Association. It is the newest project under NBCA's \$1.3 million research program designed to promote the building of even higher quality bituminous pavements.

Already completed or now under way is NBCA's program are studies of asphalt cement, rheological properties of bituminous concrete, improved riding quality, allowable moisture in hot-mix, effect of aggregate coating on hardening of asphalt cement, merit systems to stimulate quality of workmanship, a design guide for heavy-duty bituminous concrete pavements, and a

survey and coding on IBM cards of all available literature in the bituminous concrete paving field.

The purpose is to develop a test that will identify asphalt-aggregate combinations that may ravel (lose its surface aggregate) in the first year or so after construction. The study will be undertaken for NBCA by the Texas Transportation Institute located on the Texas A. and M. Campus, College Station, Texas. Principal investigators in the work are Professors Bob M. Gallaway and

Rudolf A. Jimenez of Texas A. and M. College.

### Calcium Chloride for Abrasive Treatment in Winter Maintenance

This new free manual includes data on calcium chloride, recommended procedures for treating and storing abrasives, applying and spreading abrasives. It also contains helpful charts on the melting action of calcium chloride, and distances required to stop on icy pavements.

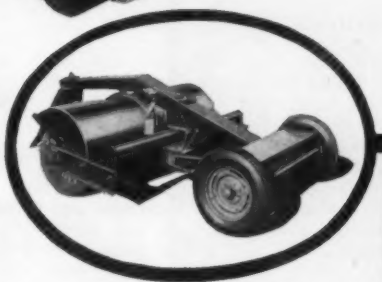
# "NEW BROOM SWEEPS CLEAN"

*on street or highway*



## STANDARD STEEL

**ENGINE and TRACTION  
DRIVEN CONSTRUCTION  
BROOMS**



### Check these features:

- Two way, 15° and 30° brush positions.
- Up to 73" wide sweeping patch even at 30°.
- Easy acting screw type lifting device eliminates troublesome hydraulic systems.
- High position broom lock for traveling.
- Wear equalizer adjustments at each end of brush.
- Chain drive from counter shaft to brush shaft.
- Traction model has 2 speed transmission.
- Engine model has 15 HP VE-4 Wisconsin power.

*Write us or see your dealer for complete details.*

**OTHER PRODUCTS OF STANDARD STEEL**  
 ASPHALT DISTRIBUTORS . . . BURNERS . . . POWER AND TRAC-  
 TION DRIVEN CONSTRUCTION BROOMS . . . MAINTENANCE  
 DISTRIBUTORS . . . TAR KETTLES . . . AGGREGATE SPREADERS  
 STREET FLUSHERS . . . PIPE LINE EQUIPMENT . . . SUPPLY TANKS  
 SHELVEING HARDWARE . . . AND AGRICULTURAL EQUIPMENT



**Standard Steel Works, Inc.** NORTH KANSAS CITY, MO

BR-1-57

# NEW PRODUCTS

Listed here are reviews of new and improved equipment items, selected to aid our readers in purchasing. See reader service numbers on enclosed postcard.\*



Guardrail Maintainer

## Guardrail Maintainer

The Ross and White Co. has designed a machine that will wash, scrape off old paint, and repaint guardrails. Tests indicate a ten mile stretch can be refurbished in less than 3 days, according to the manufacturer. The "Maintainer," which is operated from a telescoping boom and extension arm assembly that attaches to the front bumper of a truck, is said to require only a crew of 3. The unit is designed to perform one operation at a time. To wash guardrail, a washing attachment hooks up to the boom at the front of the truck and quick-connect water lines are engaged. After the truck pulls up to the guardrail and the

washer is locked into position, the truck then drives along with washer in operation.

To remove old paint, brushes in the washer are replaced with heavy-duty wire brushes. Shields prevent paint from being thrown on the ground or on passing vehicles.

The unit is designed to allow up and down movement of the truck as well as difference in height of the guardrail in relation to the ground. It also allows for side to side movement of the truck as it drives along.

Ross And White Company c/o Hanson & Stevens Inc., 205 W. Wacker Dr., Chicago 6, Illinois

For more details circle 101 on Enclosed Return Postal Card.

## Colored Concrete

A new admixture that creates integrally colored concrete has been developed by Rodeffer Industries, Inc. The product, called "Colorfull," is designed to relieve the general grey color of ordinary concrete, has a range of ten colors and reportedly has been tested for use over a five-year period

on the West Coast. The originator also states that the product is resistant to fading, as the color goes completely through the entire thickness of the concrete. The ability to obtain complete uniformity and color fidelity is also claimed by Rodeffer, and users of the mixture have reported that mix trucks supplying "Colorfull" are cleaned out with no possibility of color

carry-over to subsequent loads.

The Wesco Materials Corp., of Dallas, Texas has become the first franchised manufacturer of the new product. They will make the mixture available in their marketing area to concrete producers, contractors, builders, architects and other users from ready mix companies within the state.

Rodeffer Industries, Inc., 965 N. Oaks Ave., Pasadena, Calif.

For more details circle 102 on Enclosed Return Postal Card.

## Asphalt Batch Tower

Barber-Greene Co. has introduced a new 2,000-lb. asphalt batch tower. According to the manufacturer the new unit, designated the Model A-8, includes such features as sectional design for easy erection, an automatic asphalt metering system, the Dyna-Mix pugmill, hydraulically operated pugmill discharge gate, easy power control operation, 3½-deck horizontal vibrating screen, 11 tons of storage capacity, four-bin design to meet all specifications, and a line of accessories.

The tower is available with wet and dry cycle timers for automatic control of the duration of wet and dry mixing cycles for any desired interval up to 150 seconds, and semi-automatic controls which cycle the entire operation from weigh-hopper discharge through dry mixing, asphalt spray, wet mixing and pugmill gate discharge.

Barber-Greene Co., Aurora, Ill.



Batch Tower

For more details circle 103 on Enclosed Return Postal Card.

\*To readers outside of the United States—postal rules forbid use of business reply cards outside of the U.S. Please write to us listing the numbers, month and name of magazine, and mail with your name and address to Inquiry Dept., Roads and Streets, 22 W. Maple St., Chicago 10, U.S.A.





**BUSINESS REPLY CARD**

First Class Permit No. 52, Chicago, Ill.

**ROADS & STREETS**

22 WEST MAPLE STREET  
CHICAGO 10, ILLINOIS



**BUSINESS REPLY CARD**

First Class Permit No. 52, Chicago, Ill.

**ROADS & STREETS**

22 WEST MAPLE STREET  
CHICAGO 10, ILLINOIS

**ROADS & STREETS**  
22 West Maple Street  
Chicago 10, Illinois

Please continue sending me Roads and Streets. Also send me further information on products and materials mentioned in the September Roads & Streets as circled below

**CIRCLE THE NUMBERS AND MAIL NOW!**

About New Equipment and Literature:										101	102	103	104	105	106	107	108	109	110	111
112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132
130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150
150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170
171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191
192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212
213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233
234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254
255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275
Further Information on Advertised Products:										276	277	278	279	280	281	282	283	284	285	286
287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307
308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328
329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349
350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370
371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391
392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412
413																				

Name \_\_\_\_\_ Title \_\_\_\_\_

Firm or Gov't. Dept. \_\_\_\_\_

Street \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ 9-61

NOT GOOD AFTER OCTOBER 15, 1961

**ROADS & STREETS**  
22 West Maple Street  
Chicago 10, Illinois

Please continue sending me Roads and Streets. Also send me further information on products and materials mentioned in the September Roads & Streets as circled below

**CIRCLE THE NUMBERS AND MAIL NOW!**

About New Equipment and Literature:										101	102	103	104	105	106	107	108	109	110	111
112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132
133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153
154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174
175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195
196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216
217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237
238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258
259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279
Further Information on Advertised Products:										280	281	282	283	284	285	286	287	288	289	290
291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311
312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332
333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353
354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374
375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395
396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413			

Name \_\_\_\_\_ Title \_\_\_\_\_

Firm or Gov't. Dept. \_\_\_\_\_

Street \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ 9-61

NOT GOOD AFTER OCTOBER 15, 1961

## Four-Wheel Drive And Four-Wheel-Steer Tractor

M-R-S Manufacturing Co. announces a new line of four-wheel-drive and four-wheel-steer tractors. The new tractors have an independently controlled hydraulic steering system which allows the operator to steer front and rear wheels independently. This provides, it is said, a wide degree of steering selectivity including co-ordinated "crab", independent front wheel and rear wheel steering.



Four-Wheel-Drive Tractor

The manufacturer also states that four-wheel-drive tractors operate efficiently with hydraulic bulldozers and hydraulic scrapers or with mounted attachments such as hydraulic cranes, bucket loaders, backhoes, tool bars and logging equipment. Also, the four-wheel-steer feature reportedly makes the tractors suitable for powering heavy sheepfoot and rubber tired compaction rollers.

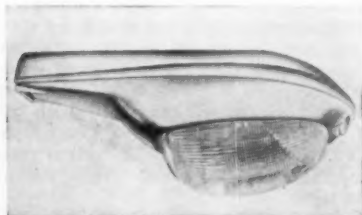
M-R-S Manufacturing Co., Box 336, Flora, Mississippi

For more details circle 104 on Enclosed Return Postal Card.

## New Mercury Luminaire

Revere Electric Mfg. Co. announces a new line of 250 and 400 watt mercury luminaires. This new 2600 Series has two optional features; built-in ballasts and mounting adapter for photoelectric control. Upper and lower housings are precision die-cast aluminum. The molded prismatic refractor has a heat and moisture resistant silicone rubber gasket to provide a completely sealed optical assembly. Adjustable socket positions and choice of lamp provides distribution pattern desired.

Revere Electric Mfg Co., 7420 Lehigh Ave., Chicago 48, Ill.



Mercury Luminaire

For more details circle 105 on Enclosed Return Postal Card.

## Hydraulic Backhoe

A quick-disconnect feature for 30-second coupling, 12'6" digging depth and a dirt ejector bucket are features of a new hydraulic backhoe announced by Equipment Div., Young Spring and Wire Corporation for use on Caterpillar wheel loaders. Called the Ottawa LX Backhoe, the unit fits Cat 922 and 944 wheel loaders as well as 933 Traxcavators. The manufacturer states that the quick-connect Hydra-Hitch allows the entire backhoe to be attached in 30 seconds by pushing one lever to engage two cone mounting pins and latching quick release. Coupling the quick connect hydraulic lines completes the job.

For digging, the unit has a 12'6" depth, 8'6" dump height and 190° swing, right to left. Cushioning ports prevent "slamming" the boom at the limits of the swing. Crowd, boom and bucket cylinders are double-acting and reverse-mounted, keeping the chrome-plated rods out of damaging dirt. The machine can exert 7000 lbs. force at the bucket cutting edge, according to the manufacturer.

Equipment Division, Young Spring & Wire Corp., Bowling Green, Ohio



New Hydraulic Backhoe

For more details circle 106 on Enclosed Return Postal Card.

## Crushing and Screening Plants

Five new models, the "Pit-Man" series, of gravel crushing and screening plants have been introduced by the Gruendler Crusher and Pulverizer Co.

Model 25 has a single crusher and is designed to produce a one-sized product, suitable, the manufacturer states, for low cost road construction and maintenance. Models 35 and 50 are reportedly moderate capacity units for production of three products at one time. Models 75 and 100 are for high production jobs. These units have larger Jaw Crushers, Roll Crushers, and Triple Deck screens than previous manufacturer's models. The size of these plants usually requires a separately mounted power unit.

Gruendler Crusher and Pulverizer Co., 2915 N. Market, St. Louis 6, Mo.

For more details circle 107 on Enclosed Return Postal Card.

## Concrete Vibrators

A new, 180-cycle, 230 volt, motor-in-head concrete vibrator has been announced by the Viber Co. The motor, which produces 10,500 rpm, contains only two moving parts: the rotor and the eccentric weight. These turn on lubricated and sealed anti-friction bearings.



Concrete Vibrator

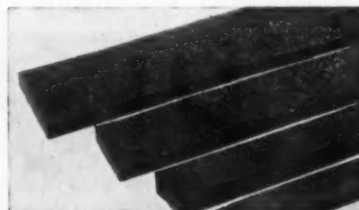
According to the manufacturer the "Hi-Viber" is designed for one-man operation and can be handled easily on narrow scaffolding or high forms. Extension cables of the proper size makes it possible to reach pour sites as far as 200 feet from the power source. Power is provided by a portable gasoline engine-generator plant. The generator produces AC and DC current.

Viber Company, 726 S. Flower St., Burbank, California

For more details circle 108 on Enclosed Return Postal Card.

## Concrete Sealer

National Explosion Joint Co. announces "Sealfastic," a pre-molded concrete joint sealer, in a wide range of sizes to fit any joints from 1/8" sawed to two-inch wide joints. Widths are usually selected so that the joint will hold the sealer to about 1/8" its expandable width. The 100 percent expansion property of the material then adjusts it to any irregularities of joint



"Sealfastic" Sealer

width. According to the manufacturer other properties of "Sealfastic" include: very low installed cost, long life, neatness, no spillage, no extrusion, one-man installation, fuel resistance, color choice.

National Expansion Joint Co., 1601 Embarcadero, Oakland, Calif.

For more details circle 109 on Enclosed Return Postal Card.



## Trackmobile

Whiting Corp. has introduced a new model of the "Trackmobile," the mobile road-to-rail car spotter which is equipped with power couplers on either side of the machine for greater draw-bar pull. The new unit has a



"Trackmobile"

drawbar capacity of 18,000-lbs. which is an increase over the standard one-coupler model, according to the manufacturer. The "double-feature" by which the unit can couple to cars on either side enables it to "borrow" added weight and gain greater tractive effort from the double load.

Operator visibility is reportedly good when negotiating curves. Since both sides of the "Trackmobile" are coupler sides, the operator can position the machine so that the cab rides on the side of the track that gives an unobstructed view.

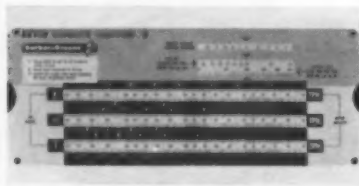
Whiting Corp., Harvey, Illinois

For more details circle 110 on  
Enclosed Return Postal Card.

## New Dryer Capacity Calculator

Barber-Greene Co. has made available a new Dryer Capacity Calculator designed to assist asphalt plant owners in the selection of the proper aggregate drying equipment to suit their specific requirements. The calculator can be used to select the proper equipment to suit a particular set of dryers for various percentages of moisture removal in three air ranges, and obtain fuel oil or natural gas consumption per ton. This information is helpful in estimating bid capacities and costs, it was said.

Barber-Greene Co., 400 N. Highland Ave., Aurora, Ill.

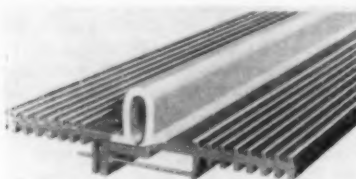


Dryer Capacity Calculator

For more details circle 111 on  
Enclosed Return Postal Card.

## Nail-On Waterstop

W. R. Meadows Inc. announces the availability of their new "NAIL-ON" DUO-PVC WATERSTOP. This waterstop has been specifically designed to eliminate the need for splitting the form during installation. The manufacturer states that contractors will be interested in the "Nail-On" feature of this waterstop as it eliminates the need for costly split forms to hold the waterstop in position during the pouring operations. Waterstop is extruded with a special nailing tab, pre-punched on 6 in. centers, that is nailed to the concrete form with special double-headed nails.



"Nail-On" Waterstop

The waterstops are extruded simultaneously from two PVC compounds. The PVC utilized in the center area is compounded to combine strength with maximum flexibility, whereas, the multiple-rib area is extruded from a PVC compound that offers strength with rigidity, the manufacturer states. Also, a U-Bulb center area design that will mechanically expand up to 1½ in. is designed to handle expansion without stretching the material or stressing the multiple-rib area.

W. R. Meadows Inc., 26 Kimball St., Elgin, Ill.

For more details circle 112 on  
Enclosed Return Postal Card.

## Angle Dozer Blade

International Harvester Co. introduces a new angle dozer blade that reportedly does the same work as a hydraulically-controlled unit. The manual angle and tilt blade is designed for front mounting on International crawlers in the below 50 hp class. The manufacturer states that the blade can be used to build roads and driveways, plow snow, clear brush lands, clean feed lots, dig ponds and do other related dozer work.



Angle Dozer Blade

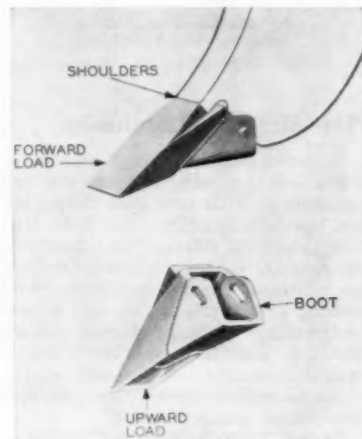
The blade can be angled left or right to 27 degrees with the use of only two pins. A second adjustment allows the blade to tilt 8 degrees in either direction. Booms are mounted outside the tracks for further adjustment and stability. The 92" x 28" moldboard is reinforced top and bottom by formed box sections and is curved to give plow-like roll to the soil. Two 3½" by 12" cylinders supply a 48" lift and 12" drop. The cutting blade is made from heavy ½" x 6" steel and is reversible.

International Harvester Co., Consumer Relations Dept., 180 No. Michigan Ave., Chicago 1, Ill.

For more details circle 113 on  
Enclosed Return Postal Card.

## Ripper Tips And Shanks

Availability of newly designed tips and shanks for tractor mounted rippers has been announced by Caterpillar Tractor Co. The tips of the two configurations, one for high impact applications, the other for use in highly abrasive material. Both are fabricated from alloy steel, hardened to Rockwell C50. They are made of a forged baseplate and a die-formed wrapper or booth, joined by a high penetration weld. The baseplate is of a channel section selected for its ability to resist bending without adding unnecessary weight. The tips are self-sharpening and reportedly retain good penetration quality throughout their lives.



Ripper Tips

The new slotted key design for mating tips to shank will not fit any shank currently in the field. However, weld-on adapters are available that will permit use of the new tips with all former-design shanks from Caterpillar No. 8 and No. 9 rippers, as well as with similar-sized shanks of other manufacturers.

Caterpillar Tractor Co., Peoria, Illinois

For more details circle 114 on  
Enclosed Return Postal Card.



## Increase roadway and runway safety with Transite Underdrain Pipe

Eliminate the contributing causes of sags, holes and similar hazards to under-wheel safety with perforated Transite® Underdrain Pipe. Its superior performance in groundwater control has been proved in many county, state and federal installations.

Transite Underdrain has an exceptional weight-to-strength ratio. The coupling, used to form the joints, assures a flexible yet reliably joined system. This, combined with long (10' and 13') lengths, keeps the pipe aligned and allows the line to ride with normal soil movement without disturbance to the system. Transite's smooth inner surface and low coefficient of friction assist the flow of water and reduce the opportunity for water-borne silt to build up on the invert. Thus, the accurately sized, drilled and located perforations can perform their function of letting groundwater into the line at a maximum flow rate.

For full details, send for data sheet TR-246. Write to Johns-Manville, Box 362, RS-9, New York 16, N. Y. In Canada: Port Credit, Ont. Cable address: Johnmanvil.



**JOHNS-MANVILLE**   
... for more details circle 305 on enclosed return postal card

Where profit hangs on the  
end of a boom, let Koehring  
Truck Cranes carry the load



*Under load or on the road  
nothing handles like a Koehring  
... see your distributor today*

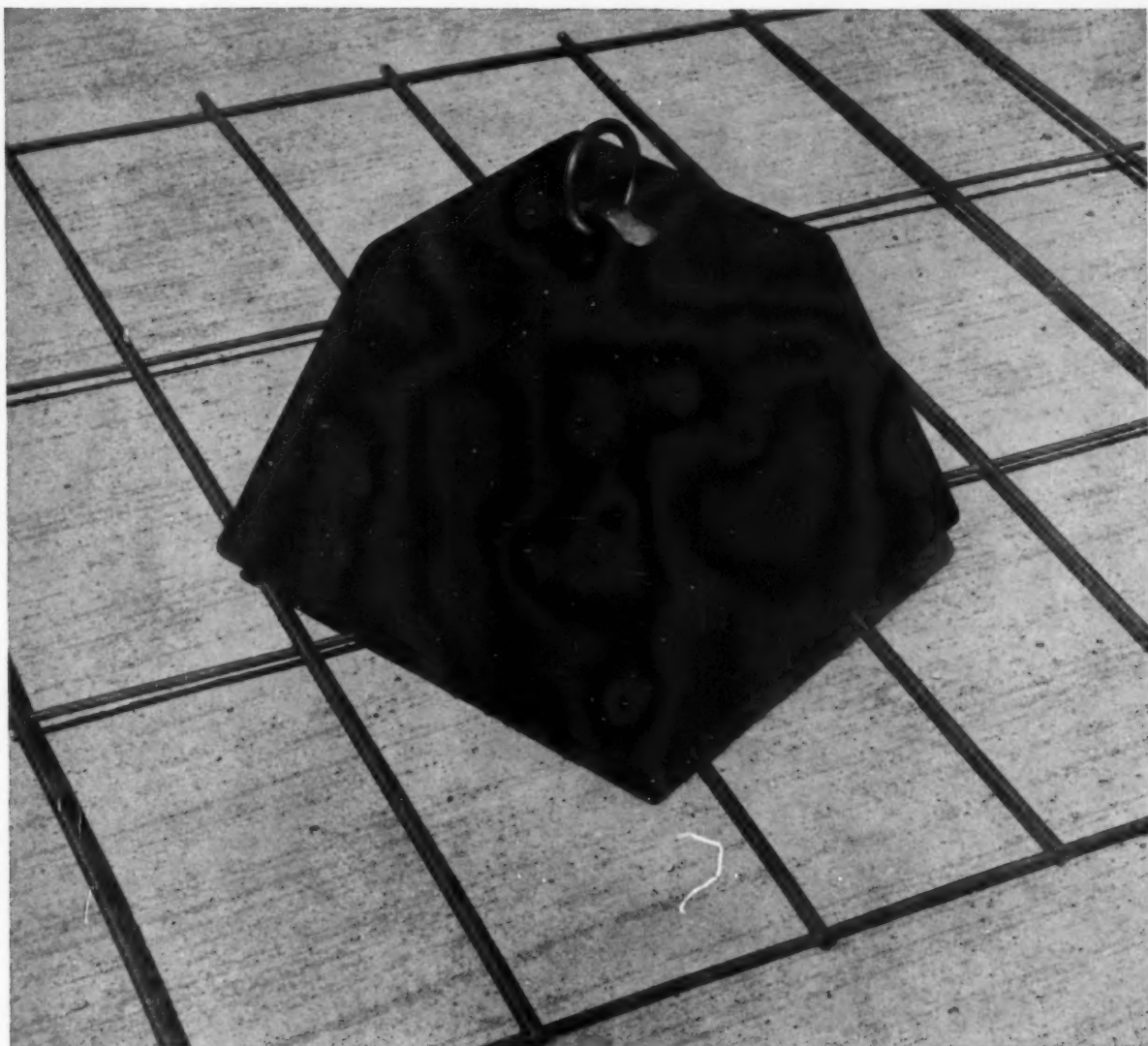
MODEL	MOUNTING	LIFT CAPACITIES rated at 85% of tipping load with outriggers
218	3-Axle Truck or Self-Pro- pelled Cruiser	36,000 lbs at 10-ft radius
305	3-Axle Truck or Self-Pro- pelled Cruiser	50,000 lbs at 12-ft radius
330	3-Axle Truck	60,000 lbs at 15-ft radius
445	4-Axle Truck	90,000 lbs at 12-ft radius
555	4-Axle Truck	110,000 lbs at 12-ft radius

**KOEHRING**  
DIVISION OF KOEHRING COMPANY  
Milwaukee 16, Wisconsin

K105

... for more details circle 307 on enclosed return postal card





## Heavy loads shorten concrete road life... CF&I Welded Wire Fabric lengthens it

In modern concrete highways, reinforcement with welded wire fabric is important. Without it, major arteries don't stand up well against pounding tires and heavy loads.

When embedded in concrete, CF&I Welded Wire Fabric serves as a steel backbone that literally holds highways together. It cushions the impact of heavy, fast-moving vehicles by distributing load stresses and minimizing crack-

ing. And these are the things that make the difference between long, trouble-free road life and expensive maintenance operations.

Put CF&I Welded Wire Fabric to work in your roads. It meets all ASTM specifications and is available in a wide range of gages and spacings to meet virtually every type of reinforcing requirement. Call your nearby CF&I sales office for complete details.

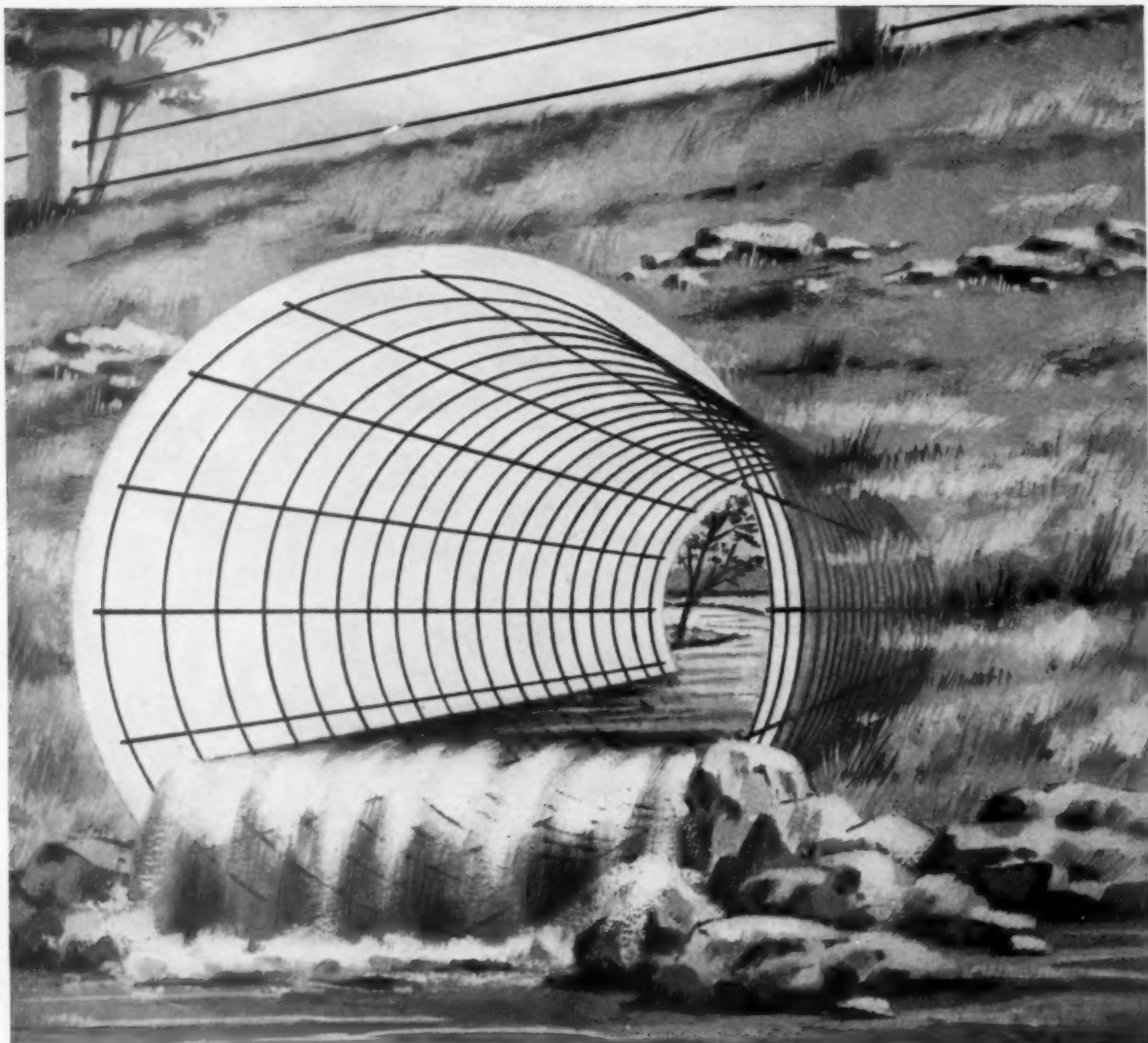
### THE COLORADO FUEL AND IRON CORPORATION

Denver • Oakland • New York  
Sales Offices in Key Cities



©200

... for more details circle 289 on enclosed return postal card



## Interested in pipe life?

### CF&I Welded Wire Fabric lengthens it

In culverts and drainage systems, concrete pipe has to fight a constant battle against external pressures. But it has a powerful ally in CF&I Welded Wire Fabric.

Reinforcement with this tough steel mesh combines the strength of steel with the permanence of concrete. The result is pipe that has greater structural

strength, maximum corrosion-resistance, and the overall toughness that means long, maintenance-free life.

CF&I Welded Wire Fabric meets all ASTM specifications and is available in a wide range of gages and spacings to meet virtually every requirement. Ask your CF&I salesman for complete details.

8139

#### THE COLORADO FUEL AND IRON CORPORATION

Denver • Oakland • New York  
Sales Offices in Key Cities

... for more details circle 331 on enclosed return postal card



## New 840 hp Rubber Tired Tractor

R. G. LeTourneau, Inc. announces the diesel-electric Series K-103 "Pacemaker" tractor, an 840 hp rubber tired tractor, intended to supplement tandem pushers for loading big-capacity scrapers. The tractor is built like a tricycle with two wheels forward and a single wheel (which steers) at the rear. Wheels are individually powered, each with its own DC motor and gearing built inside the hub. Changing polarity of the applied voltage changes the drive from forward to reverse, with the same power and speed available for either direction of travel. Dimensions of the tractor are 42 feet long by 15 feet wide by 16 feet high.



"Pacemaker" Tractor

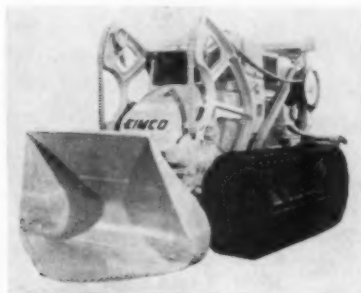
Two diesel-electric generating plants supply power for the three electric wheels on the Series K-103. This electric drive combination develops over 90,000-lbs. of drawbar pull, according to the manufacturer.

R. G. Letourneau, Inc., Box 2399 S. MacArthur, Longview, Texas

For more details circle 115 on Enclosed Return Postal Card.

## Electric-Powered Excavator

The Eimco Corp. has introduced the new electric-powered excavator to its line of crawler tractor units. Designated the Eimco 105E EXCAVATOR, this new machine is powered by a 100 hp 50 or 60 volt A.C. electric motor of from 220 through 550 volts. The fan cooled motor is totally enclosed to protect it against severe overloads and requires minimum maintenance, according to the manufacturer. Standard bucket capacity is 1 cu. yd. and the machine weighs 38,500 lbs. Speeds range up to 4.2 mph in either forward



Electric-Powered Excavator

or reverse. Maximum drawbar pull with zero track slippage at level is 40,000 lbs. Discharge heights of from 9'6" to 12'5" are available.

According to the manufacturer this machine was developed to overcome the problems of engine exhaust encountered indoors and underground, where a machine with high loading capacity could otherwise be of real production value.

Eimco Corp., P. O. Box 300, Salt Lake City 10, Utah

For more details circle 116 on Enclosed Return Postal Card.

## New Ripper

A heavy duty ripper specifically designed to match the performance of the Caterpillar 966 Traxcavator has been added to the American Tractor Equipment Corp.'s ripper line. The new unit features dual-cylinder hydraulic control and a 14-in. standard ripping depth, with optional depths to 32-in. Ground clearance with standard shanks is 3'9" with pinned shanks, or 2'5" with shanks hinged.



"Ateco" Ripper

The tool beam is of internally-reinforced welded alloy steel 8" x 8" in section and 91 1/4" long, and will accommodate 1, 2 or 3 shanks. Special bank ripping shanks and cable-laying shanks are available to add versatility to the machine. With the ripper weight (3,554 lbs. with 3 shanks) counterbalancing bucket weight, maximum traction is maintained on all four tires for improved performance, the manufacturer states.

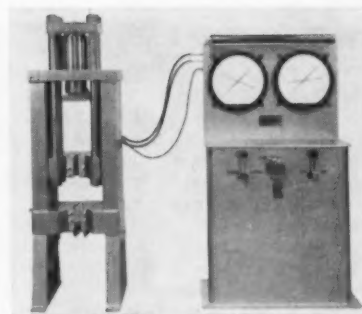
American Tractor Equipment Corp. (Ateco), 9131 San Leandro St., Oakland, California

For more details circle 117 on Enclosed Return Postal Card.

## Materials Testing Machine

Forney's Inc. has introduced what they say to be the first Universal testing Machine designed specifically for the construction materials laboratory. The manufacturer states that the machine is standard equipped for testing reinforcing bars from No. 2 to 11 inclusive in tension and 6" by 12" cylinders in compression.

The standard model is a dual range console type machine with a maximum capacity of 250,000 pounds. A heavier model is said to have a capacity of 400,000 pounds. A wide range of stand-



Universal Testing Machine

ard accessories adapts the machine for testing cubes and masonry units in compression, bricks in compression and modulus of rupture, beams in transverse loading, and weld specimens in bend and tension.

Forney's Inc., Tester Division, New Castle, Pa.

For more details circle 118 on Enclosed Return Postal Card.

## Concrete Bucket

Eric Strayer announces the addition of concrete buckets to their line of materials handling equipment. According to the manufacturers, their buckets embody a new design principle that replaces gears and cogs with a linkage system. Benefits claimed are: smooth, positive discharge control; any volume desired; and less physical effort to operate. Buckets come in two models: upright and laydown. Both are available with manual or air control.

Eric Strayer Co., Geist Road and NKP RR., Erie, Penn.



Concrete Bucket

For more details circle 119 on Enclosed Return Postal Card.



## Tractor-Shovel Unit

The Frank Hough Co., has announced a new Series B version of their H-30 four-wheel-drive tractor-shovel. This unit is now equipped with a  $1\frac{1}{4}$  cu. yd. bucket, which adds 25 percent more capacity than previous models, according to the manufacturer. The boom arms are positioned ahead of, and away from the operator. The unit has a walk-in operator compartment, new hand rails and safety ladder, adjustable bucket seat and new transmission controls. The steeply-sloped cowl, with no obstruction to right or left, provides excellent operator visibility.



Series B Tractor-Shovel

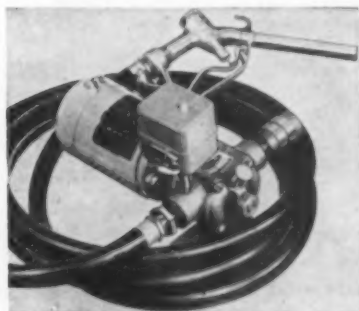
The manufacturer states that the boom mechanism and single bucket tilt cylinder result in from 6 to 12 fewer pivot and grease points than other loaders. The Hough-designed full power-shift transmission is a full-reversing, constant-mesh, counter-shaft type, with balanced, rotating hydraulic clutches.

The Frank G. Hough Co., Seventh Ave., Libertyville, Ill.

For more details circle 120 on Enclosed Return Postal Card.

## Electric Fuel Transfer Pump

The Jerome Simer Co. has announced the automatic electric powered "Spec-D-Filler" pumping unit for on-the-job refueling of motorized equipment. The manufacturer states that refueling with the unit can be done from a pick-up truck. The pump operates at 20 gpm with a 6 or 12 volt DC battery, is self-priming, and has a



Fuel Transfer Pump

pressure switch set at 10-20 pounds.

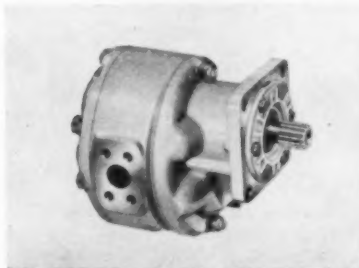
When the discharge nozzle is closed, the motor stops, conserving battery power. The manufacturer recommends that the pump also be used for scavenger service and field transfer of sprays, agricultural chemicals, or other water-like liquids. Stainless steel models are available for pumping chemicals that damage bronze.

The Jerome Simer Corp., 207 Humboldt Ave., North, Minneapolis 5, Minn.

For more details circle 121 on Enclosed Return Postal Card.

## Hydraulic Pumps

The Hydreco Division of The New York Air Brake Co. has just announced a new series of heavy duty, gear type, hydraulic pumps designed to meet the demand for higher operating pressures on large mobile and off-the-highway construction equipment. Designated the 3000A Series, these gear pumps are rated at from 40 to 95 gpm at 1800 rpm for fluid power systems to 2000 psi and 2500 psi, and operating speeds to 2800 rpm, according to the manufacturer. Available with standard S.A.E.



Hydraulic Pump

mountings, the new series is adaptable to all types of applications on heavy-duty mobile equipment; such as dump trucks, bulldozers, cranes, front end loaders and scrapers, the manufacturer also states.

Hydreco Division of The New York Air Brake Co., 9000 E. Michigan Ave., Kalamazoo, Michigan

For more details circle 122 on Enclosed Return Postal Card.

## Heavy Duty "Earthripper"

The Cabot Corp., Machinery Division, announces a new line of heavy duty construction equipment designated as the "Earthripper 5000." The machine is a full hydraulic operation backhoe with  $\frac{1}{2}$  cu. yd. capacity and a  $15\frac{1}{2}$  ft. digging depth. Continuous 360° rotation is designed to save time and permit easy access to digging and dumping operations, according to the manufacturer. The unit has 180° action at the digging bucket and the bucket is quickly changed from backhoe to shovel operation. The hydraulic system features a 125 gpm triple tan-



The "Earth Ripper"

dem pump directly connected to a 320 cu. in. gasoline engine. Mobility is provided by the ruggedly constructed carrier with 6x4 rating of 33,500 lbs. gv. or a 6x6 rating of 35,000 lbs. It can travel any place a truck can travel, at normal truck speeds, the manufacturer also states.

Cabot Corp., Machinery Division, Box 1101, Pampa, Texas

For more details circle 123 on Enclosed Return Postal Card.

## Soil Compaction Unit

The Jay Division of J. Leukart Machine Co., Inc. announces an improved soil compaction unit, the Model J-13, which reportedly permits greater control and easier starting. The new model now has a centrifugal clutch as standard equipment which permits the operator to stop forward motion vibration without stopping the engine. Idling the engine disengages the centrifugal clutch on the tamper. A new carburetor and fuel line which permits varying the engine speed for best compaction results and for easier starting has been added, says the manufacturer. Also, a new light weight, plastic, dry type, air cleaner is used with the new carburetor that reportedly will assure long engine life.

Jay Company, Division of J. Leukart Machine Co., Inc., 2222 S. Third St., Columbus 7, Ohio



Model J-13 Tamper

For more details circle 124 on Enclosed Return Postal Card.

ARE YOU  
WASTING  
MONEY BY  
INEFFICIENT  
SALT HANDLING  
TECHNIQUES?

LET MORTON SALT COMPANY SPECIALISTS IN SALT ADVISE YOU WITHOUT COST OR OBLIGATION! Nowadays there are almost as many ways of handling salt as there are companies using it.

Obviously some are more efficient than others. But often it takes a real expert in materials handling to know which of two or three methods is *most* efficient.

Because of its multiplant operations from coast to coast, Morton Salt Company has gained wide experience in all phases of salt handling. Today Morton maintains a department whose sole function is to advise on salt handling problems. There is no cost or obligation whatsoever for this service.

Just fill out and mail the coupon at right, and you will be contacted soon! Do it now—it may mean considerable savings plus increased efficiency for you!

ANOTHER SERVICE OF MORTON  
THE ONLY NATION-WIDE SALT COMPANY  
FILL OUT THIS COUPON NOW

Yes, I am interested in ways to save money in handling salt.

NAME \_\_\_\_\_

COMPANY \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_

ZONE \_\_\_\_\_ STATE \_\_\_\_\_

**MORTON SALT  
COMPANY**

INDUSTRIAL DIVISION

Dept. RS 9, 110 N. Wacker Drive, Chicago 6, Ill.

... for more details circle 316 on enclosed return postal card



You can see three steps of the US 14 surfacing job in this photo. The distributor, far ahead, applies Texaco RC-4 at 0.35 to 0.40 gallons per sq. yd. The spreader puts down 40 lbs. of crushed rock per sq. yd.—and is immediately followed-up by the first of Megarry's steelwheel and rubber-tired rollers. CONTRACTOR: MEGARRY CONSTRUCTION COMPANY, ST. CLOUD, MINN.



## Surfacing with Texaco Asphalt saves old roads from destruction

The highway you see above is US 14 near Holabird, South Dakota. Traffic, wind and rain were taking a heavy toll of its valuable aggregate. So the South Dakota Highway Department wisely decided to save the road by surfacing it.

**Surfacing with Texaco Liquid Asphalt** is a highly effective, economical method of protecting such roads. It's a relatively simple process. You shoot the asphalt, immediately cover it with aggregate and then roll. The tough, waterproof surface obtained by this low-cost method will give years of satisfactory service.

To pave the 24 miles of US 14, the Megarry Construction Company used 87,848 gallons of Texaco Rapid-curing Cutback Asphalt No. 4. They also brought extra rollers to speed-up the most critical phase: rolling. You see, South Dakota specs require two 10-ton steelwheels and one rubber-tire roller for each distributor. Specs also call for ten passes at 3 mph. To keep the job moving, Megarry followed-up its distributors with the extra rollers—stretching them along the highway from horizon to horizon.

**Texaco Asphalt Cements and Liquid Asphaltic Materials** offer contractors a wide choice of materials for all kinds

of road building, airport runways and parking areas. If you'd like to know more about these products, send for our two fact-filled booklets: "Road Building with Texaco Asphalt" and "Plant Mixed Texaco Asphalt Pavements." Write: Texaco Inc., Asphalt Sales Division, P.O. Box 2332, Houston 1, Texas.



Chicago 4 • Denver 1 • Houston 1  
Jacksonville 1 • Minneapolis 3 • Richmond 25

ROADS AND STREETS, September, 1961



## Rotary Cutter

A new rugged industrial type rotary cutter called the "Cyclone" has been introduced by Servis Equipment Co.



Servis "Cyclone"

This is a heavy duty cutter, designed for use on highway right-of-ways, parks, and pastures. The high speed gear box permits faster travel of tractors, with a resulting clean cut. Optional open or closed rear end, smooth under section and rolled corners of cover plate provide for free flow of cut materials. Strong outside frame sections,  $\frac{3}{16}$ -in. thick cover and  $\frac{1}{4}$ -in. thick steel 8-in. deep side plates provide strength and assure against damage.

Servis Equipment Co., 1000 Singleton Blvd., Dallas, Texas

For more details circle 125 on  
Enclosed Return Postal Card.

## Fibre Glass Boom

A new all fibre glass boom is now available on Skywater aerial lifts. Boom construction is of high modulus woven roving cloth impregnated with self extinguishing polyester resin.

At the work platform or outer end of the boom, bearings and idler sheaves are nylon, eliminating greasing and the possibility of dirt contamination. The drive sheave at the leveling system is protected at wear surfaces by dry lubrica-



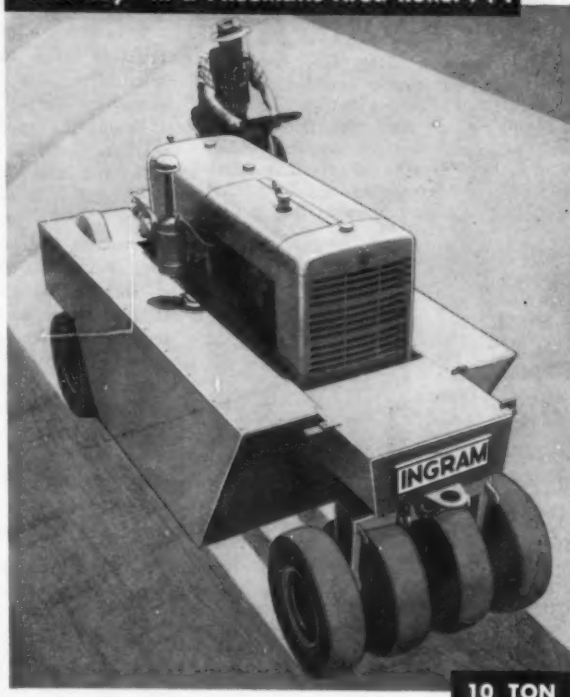
Fibre Glass Boom

tion, while a fibre glass shaft and a reduction of the number of metallic parts in the area of the work platform make possible the maximum possible flashover gap. The internal leveling system is supplied with a fibre glass rod assembly providing 102 in. of non-metallic construction from the work platform to the knuckle joint.

Hughes-Keenan Div., U.S. Air Conditioning Corp., P.O. Box 360, Delaware, Ohio

For more details circle 126 on  
Enclosed Return Postal Card.

"best buy" in a Pneumatic-Tired Roller...



10 TON

... is an INGRAM!

Today's keen competition and low profit margins make it more important that you invest in compaction equipment which provides you with **longer high performance and low maintenance.**

Thirty years of design and engineering experience (by specialists who understand compaction problems) is built into every **Ingram Roller.**

From yoke pins to power units, every part in an **Ingram Roller** is selected to provide contractors with maximum service at minimum maintenance.

Call or visit your near-by **Ingram** distributor today. You'll see why an **Ingram Roller** is your "best buy."

## INGRAM ROLLERS



Ingram 12 ton



Ingram 18 ton

Available in 3-wheel, tandem and pneumatic-tired.

**Acme IRON WORKS**

P.O. BOX 2229 • SAN ANTONIO 6, TEXAS

... for more details circle 276 on enclosed return postal card

## Tow Attachment For Tournapulls

The Robison Mfg Co. has announced a new tow attachment for LeTourneau-Westinghouse Tournapulls. This new unit, the "Pull-Yoke," will allow contractors owning older model Tournapulls to get extended life out of these machines by using them for pulling compaction tools.



Tow Attachment

According to the manufacturer it can be field-attached to any new or old model Tournapull and its rigid construction requires no maintenance. A "Pull-Yoke" fitted Tournapull permits attachment of all types of sheepfoot rollers as well as 50 and 100-ton rubber-tired rollers.

Robison Mfg. Co., 3410 N. Adams St., Peoria, Ill.

For more details circle 127 on Enclosed Return Postal Card.

## Pressure Hose Fittings

Iron Mike, a new type of detachable, reusable fitting for high pressure hose assemblies, has been developed by Aeroquip Corp.

Designed especially for industrial markets, such as construction equipment and heavy automated machinery, the fitting is recommended for a wide range of high pressure hydraulic and pneumatic applications, as well as for fuel and lubrication systems. Basically, it consists of three components: a tapered steel socket, two aluminum segments which grip hose reinforcement securely, and mate with nipple assembly for correct positioning; a steel nipple which fits into hose.

Aeroquip Corp., Jackson, Mich.

For more details circle 128 on Enclosed Return Postal Card.



Asphalt Cutter

## Asphalt Cutter

A new, high-speed rotary asphalt cutter, the "Roto-Cut," has been announced by Allied Steel and Tractor Products Inc. The manufacturer states that a single operator can cut over 6000 lineal feet of asphalt paving an hour and that the unit can be easily attached to motor graders, wheel tractors, rollers and any other piece of construction equipment having hydraulic down-pressure.

The body of the unit features one piece, alloy steel construction, while the oversize tool steel cutting wheel is differently heat treated for self-sharpening characteristics. Special construction permits the wheel-axle assembly to be lubricated in a few seconds.

Allied Steel And Tractor Products Inc., 7835 Broadway, Cleveland 5, Ohio

For more details circle 129 on Enclosed Return Postal Card.

**LOOK FOR**  
**FUNK**  
reversomatic®  
**DRIVES**

on the equipment you buy!

Get smooth, instant power shifting — both forward and reverse, or lift and lower—with JUST ONE LEVER.



Power Shovels



Earth Movers



Road Rollers



Dredlines and Cranes



Hoisting Equipment



Industrial Locomotives

**FUNK MFG. CO.**

P.O. Box 577-H  
COFFEYVILLE,  
KANSAS

... for more details circle 296 on enclosed return postal card

## BARRETT ROAD BUILDING PRODUCTS

Road Tars & Asphalts  
Pavement Sealers  
"Rode-Rite" Cold Patch  
Bituminous Concrete Products  
Urethane Insulation for Bridges

For further information or quotations, write:



### BARRETT DIVISION

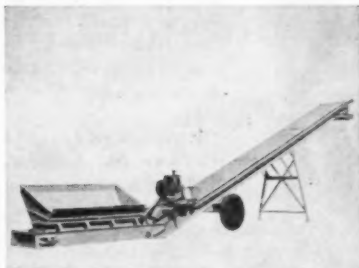
Paving Materials Sales

Merchandise Mart  
Chicago 54, Illinois

... for more details circle 282 on enclosed return postal card

## Portable Materials Handler

The new Ko-Cal Trans-A-Batch, a completely portable machine which receives dry batch material from trucks and transmits these batches to transit mix trucks at the pouring site, has been announced by Koehring Co. of California.



Trans-A-Batch

The use of the Trans-A-Batch is said to result in only one or two transit mix trucks at the pouring site and dry batch trucks running back and forth from the transit mix plant. Because of its quick transportability, the unit can be moved to several different pouring sites, fully utilizing existing transit mix plants. It consists of a 1 1/4-yd. hopper for receiving the dry batches, a positive drive feed belt under the hopper, an inclined transfer belt, a water meter and piping assembly, and an air cooled gasoline engine with electric starter and clutch.

Koehring Calif. Co., 2200 Country Club Blvd., P.O. Box 1891, Stockton 4, Calif.

For more details circle 130 on Enclosed Return Postal Card.

## Pneumatic Tire Compactor

A new nine wheel pneumatic tire compactor featuring cockpit control of tire inflation plus three exclusive features—centerpoint steering to provide full coverage on turns, independent vertical oscillation of all wheels and pressurized water spray system—has been announced by the Tractor Equipment Div. of Hyster Company.

Designated the C500-A, Hyster's new



Hyster 9-Wheel Roller

rubber-tire compactor has centrally located cockpit, from which the operator can control tire inflation to meet ground contact pressures, 9.00 x 20, 12 ply tires are standard and enable a wide range of inflation pressure from 35 to 100 p.s.i. Optional tires for higher compactive forces are available. Pressures can be adjusted while underway to suit surface conditions. As an added safety feature, each wheel is equipped with a pressure holding valve to prevent deflation of all tires in case of a blow-out or loss of air pressure in the system.

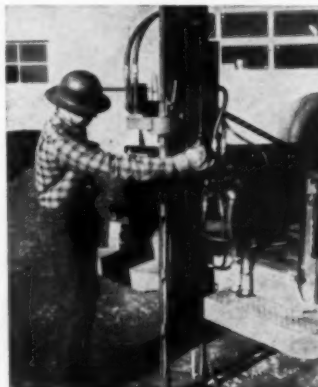
Hyster Co., Tractor Equip. Div., P.O. Box 328, Peoria, Illinois

For more details circle 131 on Enclosed Return Postal Card.

## Soil Exploration

A new, fully-hydraulic-powered, soil sampling machine has been announced by Giddings Machine Co.

The new Model GS conserves time and manpower with its easy and fast one-man operation in taking reliable soil samples in small gravel, loose rock shale and similar soil structures. An unskilled worker can core at the high-speed rate of 10 ft. in 60 sec. in favorable soils, reports Giddings. A new,



Giddings Soil Sampler

traveling extension bar which operates through the rotary head, equipped with a lever-controlled spring pin, is said to make easier and faster depth sampling. Positive vertical coring with less wear and strain on machine parts and transporting vehicle is gained by a new 4-way leveling device and stabilizer. A new quick-mount design enables the user to attach or remove the machine from the average pickup truck in minutes.

Giddings Machine Co., 403 Pine St., Fort Collins, Colo.

For more details circle 132 on Enclosed Return Postal Card.

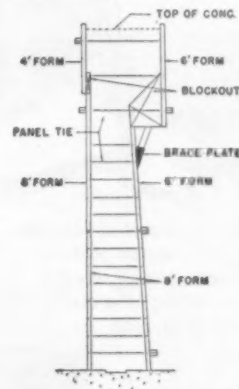
## Battered Walls



### Symons Forms on St. Louis Expressway

#### ... Form Double Battered Walls 12" at Top, 3' at Base

On the downtown phase of the St. Louis Mark Twain Expressway, contractor R. B. Potashnick & J. S. Alberici Construction Company used 8,000 sq. ft. of Wood-Ply and 20,000 sq. ft. of Symons Steel-Ply Forms.



Job called for retaining walls, many of them double battered so that forms were angled to give 12" top thickness and up to 3' thickness at base. Heights varied from 4' to 34'. In addition, the forms were used to pour footings, abutments, piers and beams. Contractor obtained 30 re-uses.

Symons Forms may be rented with purchase option. Additional information on how to use Symons Forms for battered walls sent on request.



**SYMONS CLAMP & MFG. CO.**  
4283 Diversey Ave., Dept. J-1, Chicago 39, Ill.

MORE SAVINGS FROM SYMONS

... for more details circle 322 on enclosed return postal card



## GILSON TEST-SIZING EQUIPMENT

### GILSON TESTING SCREEN

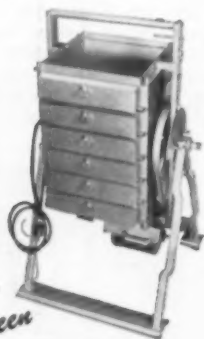
Handles up to 1 cu.ft. of concrete aggregates, coal, or minerals; 2 to 7 simultaneous separations in about 3 min.; 4" to 200-mesh.



### GILSON

#### Porta-Screen

For field inspection, ready-mix, blacktop, concrete products, minerals; portable, operates free-standing; samples up to 25 lbs.; 1½" to 200-mesh.



### GILSON SAMPLE SPLITTER

Halves or quarters large samples in seconds; handles any material from sand to 4" aggregates; adjustable openings ½" to 6".



WRITE FOR GILSON CATALOG  
SHEETS ON THESE  
AND OTHER GILSON  
EQUIPMENT AND ACCESSORIES

**GILSON SCREEN CO.**  
MALINTA, OHIO

... for more details circle 299 on enclosed return postal card



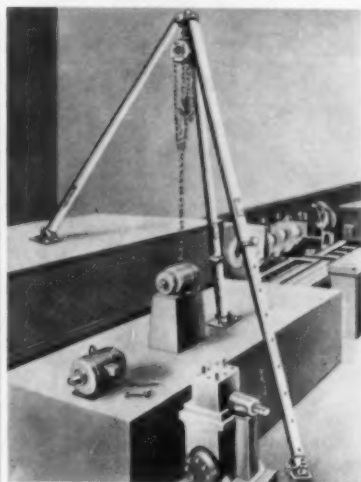
For more details circle 133 on  
Enclosed Return Postal Card.

Shown here is a new Pneu-Hydro guard rail mower. The machines can employ either the sickle bar or a rotary type mower for shoulder work and upon arrival at a guard rail the Pneu-Hydro mower is positioned to either side of the rail for close-in work.

Pneu-Hydro, 314 Haynes St., Cadillac, Mich.

### Adjustable "Skyhook"

B. E. Wallace Products Corp. introduces an alternate for expensive rigging equipment. Called "Magic Pole Adjustable Tripod," it handles installation of pumps and engines, raising heavy equipment for repairs, and loading trucks and dollies. This hoist support has three telescoping legs with up to six feet of height adjustment. Each leg can be raised and



Adjustable Hoist

lowered separately, positioned in any angle, and set on different levels without "sawing off" or "digging in." The manufacturer states that the unit can be used in cramped spaces and other areas where there are no fixed cranes, and is suited for buildings whose ceilings strength is inadequate for elaborate monorail systems.

B. E. Wallace Products Corp., Exton, Pa.

For more details circle 134 on  
Enclosed Return Postal Card.

### Transistor Radio

A tiny, new-lightweight, 9 transistor Walkie-Talkie designed especially for use by municipal services, has been announced by the Fulbright Co.

Known as the Personalphone, it provides instant two-way communication and has a maximum range of two miles on land, six miles over water. It operates for fifty hours on a standard nine-



Personalphone

volt battery and can be carried comfortably in a shirt or jacket pocket. Each unit has a 4-ft., 7-in. antenna, and weighs 13 oz. No state or federal licenses are required, reports the maker.

Fulbright Radio and T.V., 2 So. Florissant Rd., Ferguson 35, Mo.

For more details circle 135 on  
Enclosed Return Postal Card.

## "Recaps" Rebuild Ripper Points

Forged steel "Recaps" for rebuilding all popular makes of ripper points are now available from American Tractor Equipment Corp. Installation can be done by a welder. Using the "RECAP" as a template, he burns off the old point to correct length, then welds on the "RECAP" by laying a weld along its prechamfered edges.

Drop forged from a special high-strength alloy steel and heat treated to 500 Brinnell hardness, "RECAPS" are available in two sizes (3 in. wide, and 4 in. wide) which will fit all popular makes and sizes of ripper points and most dragline points, the manufacturer says.

American Tractor Equipment Corp., 9131 San Leandro St., Oakland 3, California



"Recaps"

For more details circle 136 on Enclosed Return Postal Card.



An impressive county highway system totalling 258 miles and serving a population of 30,000 is the "work area" for the Clinton County, Ohio Road Department. With 90 percent of the county road system paved, two Hough "Payloader" tractor-shovels are keeping up with the necessary maintenance requirements. The two machines, manufactured by the Frank G. Hough Company, Libertyville, Ill., are also utilized for new road construction and ice control.

## DON'T THROW AWAY CRACKED DIESEL CYLINDER HEADS

You can save 50% of replacement cost with Factory Rebuilt Swick-Guth Heads. Swick-Guth restores cracked or worn heads, blocks, transmission cases to a Guaranteed good as new condition by the Controlled Heat Process . . . successfully used for more than a Quarter Century.

**GUARANTEED TO YOUR SATISFACTION**



Send today for price list and a free booklet on the famous Swick-Guth Process, and the name of the dealer nearest you.

**SWICK-GUTH CO.**

MCPHERSON KANSAS • FORMERLY GUTH CO.

"SPECIALISTS IN WELDING"



"DIESEL CASTINGS"

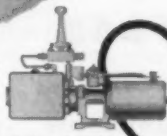
. . . for more details circle 321 on enclosed return postal card

**ROADS AND STREETS, September, 1961**

## EASY DOES IT!

Remove snow faster, easier with Monarch Power Hydraulic Controls!

DYNA-MIGHT



Battery-Operated

HY-LO-JACK  
HY-LO for Jeep

Fan Belt Driven

**The heart of the job is Monarch!**

Now's the time to install a Monarch unit for fast snow removal this winter. Lift, lower your snow plow with a flick of the wrist right from the cab . . . with Monarch Controls! Instant up-and-down action.

Can be installed quickly. See your dealer or write for illustrated folder.

**MONARCH**



**MONARCH ROAD MACHINERY COMPANY**  
1331 Michigan St., N.E. Grand Rapids 3, Michigan, U.S.A.

. . . for more details circle 312 on enclosed return postal card

# NEENAH

name's

## NEENAH

and  
the  
products  
are  
**GRAY and  
DUCTILE  
IRON  
CONSTRUCTION  
CASTINGS  
of finest  
QUALITY  
FINISH  
UNIFORMITY**



**See for yourself—**

stop by  
**BOOTH B65**  
at the APWA Congress  
and Equipment Show



Name's Neenah... if we make it  
it's a casting... and the best.

New 168-page catalog shows our  
line. It's sent promptly when  
requested.

**NEENAH FOUNDRY  
COMPANY**

NEENAH • WISCONSIN

Chicago Office

5445 North Neva Ave., Chicago 31, Ill.

... for more details circle 317 on enclosed return postal card

## Mobile Vacuum Tank

A new truck-mounted vacuum tank, for the removal or sprinkling of liquids, has been announced by Klein Welding Service. This new vacuum tank is available in capacities from 1250 to 2500 gal. It sucks up water or liquid wastes, hauls the load away, and ejects it.



Klein Mobile Vacuum Tank

The Klein mobile vacuum tank attains a vacuum for siphoning applications of 29 in. mercury at sea level. This is ample for municipal clean-up operations. With its high vacuum, it is adaptable to such purposes as pumping sewers and cesspools. In addition, the vacuum tank can be used as a street sprinkler or for wetting down construction projects. It throws a 16-ft. wide spray at the rate of 400 gal. per minute.

Klein Welding Service, Inc., 14618  
E. Arrow Highway, Baldwin Park 52,  
Calif.

For more details circle 137 on  
Enclosed Return Postal Card.

## Auger Backfiller

A new auger backfiller, said to be a multi-purpose machine with infinitely variable speeds and big capacity, has been announced by Anchor Sales Corp.

It can be driven from one job to another at road speeds up to 30 m.p.h. and backfill at speeds from 0 to 2 m.p.h. A hydrostatic transmission controlled by a single valve gives forward or reverse speed instantly. A ditch blinding attachment permits putting topsoil from 3 in. deep to completely filling a trench with topsoil. Three-point suspension makes mounting and unmounting of auger assembly fast and easy, permitting change from one job requirement to another. Hydrostatic transmission transmits power to all four wheels, each of which is equipped with hydraulic brakes. The unit has power steering and compact unit construction.

Anchor Corporation, 1109 Shimp  
Drive, Celina, Ohio

For more details circle 138 on  
Enclosed Return Postal Card.

## 48-inch Mower

A 48-in. three-blade rotary mower designed especially for mounting on the Gravely tractor has been announced by the Pennington Mfg. Co.

According to company representatives, the heavy-duty mower should find wide application in tollway and



48-In. Mower

expressway mowing. Swivel construction allows the cutter blades to follow ground contours closely, thereby providing an even cut. The three specially-hardened, chrome-manganese steel blades measure 16 inches each, providing a 48-inch cut.

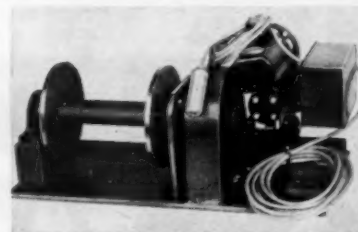
Pennington Mfg. Co., Addison, Illinois

For more details circle 139 on  
Enclosed Return Postal Card.

## Electric Winch-Hoist

A new portable electric winch-hoist with a single line pull of 4,000 lb. is being offered by City Engineering Co.

Called the My-te Super, the unit is 13 in. wide, 21 in. long, 11 in. high and weighs 160 lb. It is powered by a 110-volt, single phase, 60 cycle AC



Portable Electric Hoist

motor. Drum capacity is 325 ft. of 3/8 in. cable, or 185 ft. of 1/2 in. cable. Drum size is 2 1/2 in. dia., 9 1/2 in. long, with 9-3/8 in. dia. flanges. Free load speed is 15 rpm. Other features are stress proof shafts and Timken bearings sealed in oil, positive worm and worm gear brake and separate transformer for control switch.

City Engineering Co., Inc., 3547 Massachusetts Ave., Indianapolis 18, Ind.

For more details circle 140 on  
Enclosed Return Postal Card.



## 1000-Lb. Roller

A new roller announced by the Highbee-Reichard Corp., is reported to have guide handles adjustable to three positions to eliminate the necessity of walking directly behind the roller.



1000-Lb. Roller

The heavy water filled steel roll is 30-in. wide and 22-in. dia. It also features a forward and reverse lever, throttle, water system, cocoa mat and two spring loaded self adjusting scrapers.

Highbee-Reichard Corp., 2815 Brech-enridge Industrial Ct., St. Louis 17, Mo.

For more details circle 165 on  
Enclosed Return Postal Card.

## 12 Foot Ruler

A new measuring stick, for use by builders and contractors or others who require a rigid ruler, has been announced. The measuring stick is marked off in sixteenths of an inch, and will measure from 1/16 in. to 12 ft.

The stick is manufactured exclusively for TFC by the Lufkin Rule Company. It is made of hardwood, embossed for long life and is furnished in a fiber container for protection.

Tennessee Fabricating Co., 1490 Grimes, Memphis, Tenn.

For more details circle 141 on  
Enclosed Return Postal Card.

## Curbing Repair

The Preco Chemical Corp. has introduced a concrete adhesive, designated Rockweld C, that is used in repairing highway and street curbing destroyed by snowplows and other heavy vehicles. The product is made with epoxy resins which have been described as the strongest adhesive yet produced, according to the manufacturer. The use of the compound has reportedly opened a new procedure in the repair of curbing. Now, broken surfaces are cleaned, Rockweld C adhesive is applied with a brush and new concrete is used to fill in broken, chipped or cracked portions. The same practice is used to fill pot holes in concrete roads.

Preco Chemical Corp., Westbury, New York

For more details circle 142 on  
Enclosed Return Postal Card.

## Silicon-Type Battery Charger

A heavy duty battery charger recently introduced by Snap-on Tools Corp. incorporates many safety features that protect both the charger and the battery. According to the manufacturer an automatic thermobreaker prevents overheating while a magnetic circuit breaker protects against excessive current due to shorts, or accidentally reversed battery connections.



Silicon Battery Charger

An important feature built into this new charger is an automatic charging cycle. Signal bell notifies when charge is completed. The charger has a capacity of 75 amperes for both 6 and 12 volt battery. Control switch changes operation from automatic cycle to manual control and the charger can be used for a quick charge or a slow, overnight trickle charge.

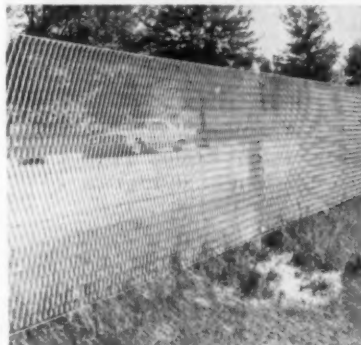
Snap-on Tools Corp., 8146 28th Ave., Kenosha, Wis.

For more details circle 143 on  
Enclosed Return Postal Card.

## Eliminate Headlight Glare

A new product, designed to virtually eliminate the hazard of blinding headlight glare on divided highways, was announced recently by Aluminum Company of America.

Called Alcoa Glare Screen, the headlight barrier system can be installed in the medial strip of heavily traveled main roads. It consists of a 4-ft. high fence of aluminum expanded metal



Alcoa Glare Screen

mesh, which effectively blocks out light from oncoming vehicles. Ideal for reducing nighttime danger on curves, or

# PACK ALL SOILS SOLID

with Deutz  
air-cooled Diesels  
... to 100% density



Essick's Vibratory  
Roller VR-72-T with  
Deutz Diesel  
F 3 L 712



BROS Vibra-Pactor  
VP 90 with Deutz  
Diesel A 2 L 514

**Fewer Passes**—You can level a site (any soil) to 100% density faster, at less cost with a DEUTZ-powered compactor. On a dam job in Oklahoma, a combination of 4 Model 65 FERGUSON rollers with large drums powered by Deutz Diesel Engines, obtained required density in just 2 passes.

**More Power**—Rugged Deutz Air-Cooled Diesel Engines deliver more power... and dependable, trouble-free, all-weather performance. Top running capacity at temperatures ranging from -40° to +140°F... minimum downtime through higher head temperatures... greater fuel efficiency from more thorough combustion.

**Less Downtime**—Deutz Air-Cooled Diesels, because of their rugged construction, air-cooling and compact design, eliminate the problems usually associated with water-cooled systems.

**Deutz Diesels Do Other Tough Jobs**—on converted or original equipment: graders, earth-movers, shovels, concrete mixers, compressors, pumps and generator sets. Air-Cooled Deutz Diesels range from 5 to 250 HP in 1, 2, 3, 4, 6, 8 and 12 cylinder models. For information, write



Diesel Energy  
Corporation  
82 Beaver St.,  
New York 5, N. Y.

Please send me literature on Deutz Air-Cooled Diesels for: **R & S-17**

☐ Industrial Use ☐ Construction Use

Name .....  
Operator ☐ Dealer ☐

Address .....

City .....Zone.....State.....

... for more details circle 292 on enclosed return postal card

on straightaway stretches with narrow medial strips, the screen needs no painting. Although it blocks direct headlight glare, the screen allows an almost unimpeded vision of the surrounding countryside, when view is at an angle of about 90-deg., states Alcoa.

Aluminum Co. of America, 1501 Alcoa Bldg., Pittsburgh 19, Pa.

For more details circle 144 on Enclosed Return Postal Card.

## Compaction Roller

The Ferguson Alley Special is designed to meet a growing demand for a compaction roller for city streets and alleys, shoulders and widening work on highways. Under 8 feet in width, the Model SP-84 can be hauled without dismantling and without permit.



Ferguson Alley Special

The unit is water ballasted with pressures up to 495 p.s.i. Equipped with 70 hp gasoline or diesel power, rolling speeds up to 5 m.p.h. are reported obtainable. Equipped with quickly reversing transmission, it operates equally well in either direction, eliminating the necessity for crossing pavement.

Shovel Supply Company, Inc., P.O. Box 1369, Dallas, Texas

For more details circle 145 on Enclosed Return Postal Card.

## Two New Tractor Cabs

Greater visibility, operator comfort and safety are reported in two new cabs developed by Crenlo, Inc., for the Caterpillar 631 two-wheel tractor.

They are reported to not interfere with a tractor's swing-away dash, and permit easy access to the left side of the engine. For normal service, Crenlo's Standard Heavy Duty Model C631A has a 12-gauge steel body, 16-gauge double door paneling and vertical reinforcing of the cab structure. For hazardous operations, the SC631A incorporates safety features of the standard cab plus a sturdy overhead steel guard, a 3/16 in. structural steel



New Cab for Cat 631

canopy and rugged rear window grill. Maximum safe visibility is provided by large shatter-proof windows. Wind-shields are tinted to reduce glare, and sloped in reverse to minimize dust collection.

Crenlo, Inc., 1600 Fourth Ave. N.W., Rochester, Minn.

For more details circle 146 on Enclosed Return Postal Card.

## New Crushing Plant Series

For easy selection of the correct plant for a specific crushing and screening job, Iowa Mfg. Co. has combined eighteen versatile models of tandem crushing plants into a new Commander Series.

The new series will include the Pit-master Commander, Models 111 and 211; Junior Commander, Models 322, 332, 422 and 432; Senior Commander, Models 443 and 543; Super Commander, Models 555 and 645; and the Master Commander, Models 557, 657 and 667. The Super and Master Commander Plants will be available with either mechanical or semi-electric drives.

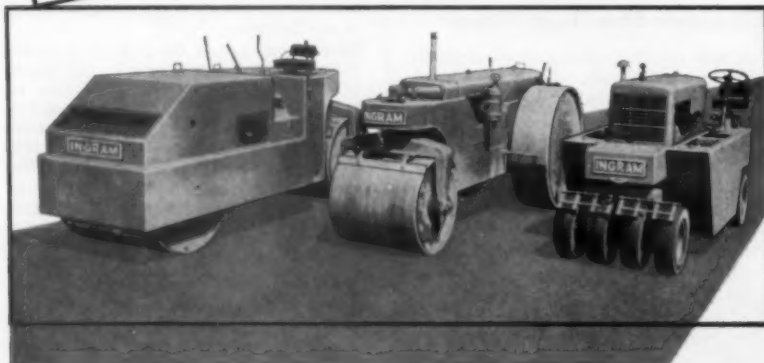
A broad line of optional accessory equipment, such as a pre-screening attachment, washing equipment and sand ejectors are available. These models are reported to offer a choice of crusher sizes which may be combined to meet specific crushing conditions and product specification.

Iowa Mfg. Co., Cedar Rapids, Iowa

For more details circle 147 on Enclosed Return Postal Card.

**FOR  
RENT**

## It's Easy To Rent AN INGRAM



Tandem

3-Wheel

Pneumatic-Tired

It's easy and practical to rent an Ingram Roller. Your Ingram Roller distributor makes it easy to rent an Ingram by cutting red tape. No delays.

You can rent an Ingram by the day, week or month. You'll find the right type and sized Ingram to fit any compaction job.

Be practical... call your near-by Ingram Roller distributor and see how easy it is to rent an Ingram. You'll save time and money.

**Ame IRON WORKS**

P.O. BOX 2020 • SAN ANTONIO 5, TEXAS

## ROTARY SWEEPER BROOMS

WE MANUFACTURE

- Austin - Western
- Bob Low Boy
- Bob-Morover
- Fordson
- Ferguson
- Girard
- Gottschalk
- Hough
- Huber
- Jap-Willy's
- Little Giant
- Little Giant \$69.50



- Malt (M.S.)
- Stenberg
- Sun
- Trench
- Trench
- Trench
- Trench
- Trench
- Trench
- Trench
- Trench
- Trench

• COCOA ROLLER MATS •  
Drag Broom Levelers  
Street Push-Concrete  
KENNEDY'S Brooms

**VAN BRUSH MFG. CO. INC.**  
2728 McGee Trlwy. Kansas City, Mo.

## TRACTOR RAILS

30% Off of Mfrs. List  
F.O.B. Indianapolis, Ind.

Complete Stock Of Rails For  
INTERNAT'L, CATERPILLAR  
ALLIS-CHALMERS

American manufactured, guaranteed  
from defect in material and workman-  
ship, and to be strictly interchangeable  
with those parts of the original manu-  
facturer.

25% Deposit Required On All Mail Orders  
Orders Shipped Same Day Received.

**S. COHN & SON**

142 W. Vermont St.—ME 5-5544  
INDIANAPOLIS 4, INDIANA  
In Business Over 40 Years.

## GOOD USED EQUIPMENT

### OSHKOSH SNOW FIGHTER

1956 Model W2209 Four wheel drive, 1400 x  
24 tires, 320 hp Cummins Diesel Engine, 6 yd.  
dump body, 12' Polw. Run 7000 Miles. Air  
Force Govt. Surp. Cost \$48,000. Will sell for  
\$12,000.

### BUFFALO SPRINGFIELD ROLLERS

Several Tandem Rollers 1949 to 1959 Models;  
KT19, KT24, KT24B, KT7 and KT25D. 8 to 10,  
and 10 to 12 ton. Also triple axle Galion,  
late model needs some trans. work. Priced  
from \$2000 to \$6500.

### BIG FORKLIFTS

7 Ross & Gerlinger 15,000 to 20,000 lb. cap.  
with 12 ply Pneu. Tires, 18' lift. Power Steering,  
Navy surplus, run only 400 to 1600 hrs.  
Exc. Cond. Priced from \$4500.

### TELEPHONE LINE TRUCKS

Several Ford F-600 with 8 man Cab. Utility  
Body, Winch, Poles, etc. Good condition,  
\$1250. International S-130 utility truck with  
Keystone Ladder Mast extends to 24 ft.

### THREE KOEHRING DUMPSTERS

Model WD60 G.M.C. Diesels, 6 yd. bodies.  
Good cond. and ready for work. Priced to  
sell fast at \$3250 Each.

### BIG NORTHWEST CRANE

Model 8 with 80' Boom. Buda Diesel, 18'  
tracks. Ready for work. Loc. Conn. \$10,750.00.

### GERLINGER STRADDLE TRUCK

Late Model SRH 30,000 lb. Cap. Govt. Surp.  
Very Good Cond. \$2500.

### GALION TANDEM GRADER

Model 105 Int. Diesel Engine \$3800.

### COMPRESSORS

Leroi 600' with Murphy Diesel, Trailer mtd.  
with Pneu. tires, \$3750.  
Worthington 500' with Cat. D17,000 Diesel.  
Trailer Mtd. Pneu. tires, \$3250.

### GENERATOR SETS

2 G.M.C. 50 KW with 671 Diesels.  
2 Cat 25 KW with Cat Diesels.  
2 25 KW Gas Engine - Trailerized.

Full information and pictures avail. on  
any of the above on request.

**W. E. McCarthy, Inc.**

241 Mystic Ave. Medford, Mass.  
Tel. Export 6-3500

## AMPHIBIOUS VEHICLE

SELLING UNDER 5% OF ACQUISITION (\$42,800)  
May we have your requirements for other Machinery & Equipment



**FOR**

Boat Owners • Fishermen • Exploration • Landscapers • Miners •  
Contractors • Loggers • Boat Clubs • Islanders • Marine Dealers •  
Marines • Utilities • Oil Companies  
MK4 (LVT (4) ) Designed for Hauling and Towing Supplies and Equipment over rough  
terrain and water. Unused, like new. 250 H.P. Continental 7-cylinder radial air cooled  
engine.....ONLY \$1795

SEND FOR DESCRIPTIVE BROCHURES

**PORT TOLEDO STEEL CO.**

310 Sylvania

Dept. EA

TOLEDO 12, OHIO

GR. 9-5357

**NOW! Get Circulation Where It Counts . . .  
Roads and Streets' Clearing House  
REACHES THE MARKET'S HEART**

**INDIVIDUAL CONTRACTORS  
CITY, COUNTY ENGINEERS  
CITY, COUNTY OFFICIALS**

Long a leader serving the heavy construction and associated fields, **ROADS AND STREETS'** "cream" circulation goes to the important men in the business. They are the men, who directly or indirectly influence the purchase and sales of new and used equipment and supplies.

When you are "in the market" reach the logical buyer or seller quickly—at a reasonable cost to yourself.

Use the Clearing House!

Just clip the coupon below and attach your copy.

**CLIP YOUR AD COPY TO THIS HANDY ORDER FORM AND MAIL TO**

### CLEARING HOUSE SECTION ADVERTISING RATES

**TRANSIENT RATE — \$11.00**  
Per Column Inch Per Insertion  
**CONTRACT RATES —** Based on  
use of total space indicated within  
yearly period.

12 in.....	\$10.45
24 in.....	10.35
36 in.....	10.00
48 in.....	9.90
60 in.....	9.80
90 in.....	9.65
120 in.....	9.50
180 in.....	9.25
360 in.....	9.00

### COPY AND CLOSING DATES

Final closing date is the Fifteenth  
of the preceding month. Maga-  
zine is issued 1st of publication  
month. If proof is desired, copy  
must be received 5 days preceding  
closing date.

### CLEARING HOUSE SECTION ROADS AND STREETS

22 W. MAPLE STREET, CHICAGO 10, ILL.

Please Insert the Attached Advertising Copy in the Next Issue  
of **ROADS AND STREETS** to Occupy \_\_\_\_\_ Inches of Space.

Number of Insertions \_\_\_\_\_

NAME \_\_\_\_\_

COMPANY \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_

**TELL US WHAT YOU HAVE TO OFFER  
AND WE'LL SET UP THE AD FOR YOU.**



## FOR SALE

- 1—Modified Rex Concrete Spreader w/6 cyl. Chrysler water cooled gasoline engine on RT wheels 20/25, Ser. #SA-113 .....\$9,250.00
- 1—HGG-4C Maginniss Hi-Lectric Generator on spring base, serial #17650-3003917 w/std. equipment, 2-HPV-3 Hi-Lectric concrete vibrators #17466-17467, w/spring mtg. plate springs, clamps, 5' cable & plug, Hi-Lectric mounting frame assy. for Rex 20-32' finishing machine #654 Assy. Hi-Lectric Hydraulic lift assy. ....\$1,100.00  
The above Rex equipment was used on only one mile of Missouri Hi-way paving and was under their factory warranty when parked.
- 1—Koring Float finishing machine used .....\$2,500.00
- 1—Rotary Ingersol Rand 210 air compressors, low hours .....\$4,700.00
- 3—Rotary Gardner Denver 125 air compressors, low hours .....\$2,975.00

### TERMS:

### McLEAN CONSTRUCTION COMPANY

1846 East Sunshine  
Springfield, Missouri  
TUxedo 1-4411

## TRUCKS

- 3—26-foot Hobbs-Shanrock tandem dump trailers
- 2—1956 RF-195 Internationals
- 10—1955 RF-195 Internationals (all in good condition)
- 2—1955 R-195 Internationals. Single axle units

### A. J. RHIAN

P. O. Box 125  
Yankton, South Dakota  
NOrth 5-2527

## FOR SALE

"One Foote Company Concrete Mixer - Model #27-E Paver, six cylinder gasoline engine, approximately 31' of boom and bucket, crawler traction, holds and mixes 27 cu. ft. of concrete, Serial #4501. Price: \$5,000.00."

### Cambridge Iron & Metal Co., Inc.

2030 Allicoanna Street  
Baltimore 31, Maryland

## USED EQUIPMENT

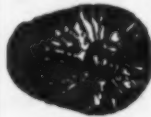
Link-Belt 1/2 Yd. Model LS50, Serial No. SD901 BACKHOE, with GM 2-71 Diesel Engine .....\$4,000  
BYERS SHOVEL, 3/4 Yd. with LeRoi gas engine, Model JR8052 .....1,500  
Kochring 3/4 Yd. Model 305 SHOVEL AND BACKHOE, with Int. Diesel engine, Serial No. 5346 .....13,000  
Northwest Model 25 PULLSHOVEL with Murphy Diesel engine, Serial No. 18265 .....19,000  
Ottawa BACKHOE mtd. on Harris Tractor Serial No. 20468 .....3,000  
Ottawa BACKHOE mtd. on Minneapolis-Moline Tractor with Dozer blade, Serial No. DXUTHW 771 .....3,400  
Ottawa MARAUDER with FRONT END LOADER AND BACKHOE, Serial No. S56253 (1960 Demonstrator) .....10,500  
Ottawa Hydra HAMMER, Model SPHH1000, Serial No. 1328MB .....4,500  
Cleveland Model 95 TRENCHER (Pitcher) .....2,000  
International Farm TRACTOR with backhoe (Pettigrass) .....1,250  
1957 Gradall. Excellent condition. Price .....\$17,500  
Insley 3/4 Yd. BACKHOE .....7,500  
BANTAM-CARRIER with Backhoe mtd. (1958) .....11,000  
Eagle Portable CRUSHING PLANT w/6x24 Jaw Crusher, 30" Telesmith secondary crusher, 3 1/2 deck screens, closed circuit plant, electric power needed. Will produce 3 sizes washed, crushed material plus sand .....63,000  
Murphy Diesel 100 KW GENERATOR SET .....7,500  
Hy Hoe 3/4 yd. HOE, mounted on Crane Carrier .....14,000  
Pettibone-Wood SPEEDMIXER Model P-710 (NEW) - List .....15,250  
plus frt. Sell .....14,000  
Ingersoll - Rand Model FM-4 WAGON DRILLS, w/X-71 Drifters (2) .....2,000 ea.  
Hough Model HUD LOADER/BACKHOE (Diesel) .....8,000  
Adams GRADER .....3,500  
COMPRESSORS:  
Jaeger 60 cu. ft. ....900  
I-R 105 cu. ft. ....1,100  
I-R 315 cu. ft. ....2,800  
Schram 2100 cu. ft. ....3,500  
LeRoi 250 cu. ft. ....3,500  
For further information on any of the above equipment.

Phone or Wire Collect

### Central New York Eqpt. Co., Inc.

122 Pickard Dr. Syracuse 11, N.Y.  
Phone GL 4-4451

## ROTARY SWEEPER BROOM



CORES - filled with any fibre including POSTRAN  
(U.S. Gov't. Approved SR. Material)

### ROAD DRAG LEVELER BROOMS STREET PUSH BROOMS

Brushes for Every Industrial Need

DALLAS BRUSH MANUFACTURING CO.  
5108 Westmoreland FL 7-6581  
N. S. VanDevanter, Owner

## FOR SALE

### MANITOWOC 3000-A 45 TON ERECTION CRANE

S/N 30138, with 100' boom, 30' jib manual controls, Cummings HBI diesel engine, 3650 operating hours, 16'4"x33" crawlers. Like new in operating condition and appearance. Complete with full erection equipment and other extras. Location: Barron River Dam near Scottsville, Ky. Price .....\$43,500.

### Markwell and Hartz, Contractors

3574 Summer Ave. - Phone FA 7-8494  
Memphis, Tennessee

## WE'RE READY TO DEAL

We have new equipment carrying special discounts. Demonstrators, prior models & used equipment.

### USED EQUIPMENT

JD 440 diesel crawler with 831 loader.  
JD 440 gas wheel tractor with 71 loader.  
JD Model L gas wheel tractor with dozer.  
MC John Deere Crawler-dozers  
JD 830 diesel sheepfoot tractor.  
JD 840 with Hancock scraper.  
JD A with loader and log fork.  
JD 420 gas crawler with Hiteco loader.  
JD model M.  
AC L12 loader.  
Ford 8N with loader.  
Ford 8N wheel tractor.  
Ford NAA with back hoe & loader.  
Hough FH loader, 3/4-yd.  
CAT 112 patrol with cab.  
Brillion seeder.  
IHC WD 9 sheepfoot tractor.  
Ferguson 35 with Wagner loader.  
Delta 5-h.p. saw.  
LeRoy air compressor, 125-CFM.  
Miller C17 tilt-top trailer.  
Landscape equipment, all types.  
Case 80 trailer, a real buy.  
Assorted trailers, all sizes.

### NEW JOHN DEERE EQUIPMENT

JD 440 diesel crawlers with 831 loaders.  
JD 440 wheel tractor with loaders and back hoes.  
JD 830 sheepfoot roller tractors.  
JD 840 with Hancock scrapers.  
JD 1010 gas or diesel crawler loaders  
JD 1010 gas or diesel crawler dozers.  
JD 1010 gas or diesel wheel tractors with loader or backhoe.  
JD Deere 3010 gas or diesel wheel tractors with loader or back hoe.

### NEW CASE EQUIPMENT

Case 430 wheel tractors with fork lift.  
Case 440 wheel tractors with loaders.  
Case 530 wheel tractors with loaders or back hoes.  
Case 310 gas or diesel crawler dozer.  
Case 310 crawler gas or diesel loader.

### TERMS—WE DELIVER

## RAMACCIOTTI

### Equipment Co., Inc.

6923 Maple St. 551-2246 Omaha 4, Neb.  
Sunday and after hours—  
393-0192, 551-0171, 553-6945,  
339-3398

## FOR SALE

### L-W MODEL C TANDEM SCRAPER

for tandem operation  
in new condition  
Priced Below Dealer's Cost  
- in our yard -

— ALSO —

### Excellent D Roadster

Less Than 250 Hours  
- Priced to Move -

### Hodge & Hammond, Inc.

720 Garrison Ave. - Kilpatrick 2-2400  
NEW YORK 59, NEW YORK

## FOR SALE

1—Lippmann Self-propelled Crusher, 12x36 jaw, 20x30 rolls, 4x12 triple deck screen, completely reconditioned, with extra roll shaft and shell.

Inquire at

### OCONTO REDI-MIX INC.

FARNSWORTH AVE. P. O. Box 8  
OCONTO, WIS. Phone 39X or 201

## "LOOK"

### CRAWLER TRACTOR PARTS FOR SALE

#### VERY CHEAP

Bulldozers, angle & Straight cable controls and hydraulic attachments.

#### WRECKING NOW - FOLLOWING TRACTORS FOR PARTS

Caterpillar: D-2, D-4, D-6, RD-6, D-7, D-8, 50 and 30.

Allis Chalmers: K-L-S - HD7, HD9, HD10, HD14, HD19, HD20, HD21A.

Internationals: T6, TD6, T9, TD9, TD14, TD14A, TD18, TD18A, TD24, TD24A.

All makes of Cetrac and wheel tractors. We now have operating latest type automatic track, roller and idler rebuilding equipment. We can furnish rebuilt tracks, rollers and idlers at lowest prices. Bring or send your old track, rollers and idlers for credit on exchange. Also, can rebuild yours at greater savings - Fully guaranteed Quality workmanship. Also - Parts and tires for Allis-Chalmers, Caterpillar, Adams, Motor Graders.

WE TRADE - WE BUY - WE SELL

We are The World's Largest  
in This Line

1961 CATALOG NOW READY  
Send 25c - Refundable

### SURPLUS TRACTOR PARTS CORPORATION

3215 Main Ave. - Phone AD 5-7503  
FARGO, NORTH DAKOTA

## KOLMAN Radial Stackers Minimize Material Segregation

Four Kolman Stackers used to prepare site of 1960 Winter Olympic Games at Squaw Valley.

#### MINIMUM SEGREGATION

By raising stacker as pile is built, fall of material is kept at a minimum.

#### MAXIMUM PORTABILITY

Wheel assemblies easily shift from radial arc position to towing position.

#### BALANCED TOP DRIVE

Design permits heavy electric motors and drives on discharge end.

#### FINGER-TIP CONTROL

Power Lift and Power Travel lets operator pinpoint stacker discharge.

### PNEUMATIC-TIRED STACKERS UP TO 150' LONG

Reports of outstanding performance by the Kolman Model 101-R Radial Stacker are rolling in from all parts of the country. Owners are enthusiastic about bonus features offered by the Kolman Stacker — features like cable suspension of the boom, two-position wheels, balanced electric drive on the head section, power lift, power travel, and cam hinge. Sizes up to 150 feet long build larger stockpiles with a single setting. And they are priced to offer the top value in the field!

Write for Literature and Dealer Name

### KOLMAN MANUFACTURING CO.

5200 West Twelfth

Sioux Falls, S. D.

### FOR SALE

1—Bantam Crane, Model M49  
Mounted on GMC 6x6 truck with backhoe and 35' boom and 3/4 yd. drag bucket. A-1 condition.

1—#308 Buckeye Trencher  
24" buckets, digs 28 to 32 inches wide and 6' deep. A-1 condition.

### LYNN ANKROM

1320 W. Wood St. Decatur, Ill.  
Phone: 423-3861

### CYLINDER HEADS

#### Save 50 to 80%

GAS and Diesel . . . Have your Cylinder heads rebuilt. Preheated and gas welded, machine complete, ready to install. Factory guarantee. Exchange service on popular models.

### Chapin Cylinder Head Co.

Since 1938 - PHONE NO. 472-6121  
CHAPIN (Morgan County), ILLINOIS

### ATTACHMENTS AVAILABLE

Northwest - Bucyrus-Erie - Lima - Marion - Link-Belt - Lorain - P&H - Manitowoc - Shovel - Backhoe - Clam Drag - All sizes.

### JAMES C. FRENCH

226 Barry Pkwy. - Talcott 3-4927  
P. O. Box 188 - Park Ridge, Illinois

### USED MACHINERY

#### For Sale

D4 Caterpillar with 4s Hyd. Dozer and 2-speed reverse.

D8 Caterpillar with 25 CCU and 85 Dozer, 2U Series with 51ick.

D2 Caterpillar with Dozer—like new.

D8800 Caterpillar Power Unit complete with Belt Pulley.

D4N Hyster Winch for D4 Caterpillar.

HD11G Allis-Chalmers Hyd. Loader (2 1/4 yd.).

Model 360 15 yd. Allis-Chalmers Scraper.

### HARDINGS, INC.

109 W. Commercial Lowell, Ind.  
Phone: Lowell 4271

### MADSEN ASPHALT PLANT

Stationary 2,000 lb. - 60 Tons Per Hour - Complete w/4 compartment bin, Pugmill, Screen, Elevators, Exhauster, Hot Oil Htr, Asphalt Tank, Etc., Complete w/Elec. Motors & Controls - New 1956 - Approx. 25,000 Tons Processed - Accept Reasonable Offer -

### GATE EQUIPMENT CO.

1132 South 4th West  
Salt Lake City, Utah  
Phone EL 9-2021

### FOR SALE

#### CONCRETE PLANT

3 Compartment 100 ton aggregate bins, 350 bbl. cement silo, 3 yd. weighbatcher, 3 yd. aggregate batcher, 20 sack cement batcher, with over - under indicators. Neptune water meter, Gardner-Denver air compressor and automatic air entraining agent dispenser. 3 - 6 CY Rex Mixers mounted on B-405 Mack and 1 A-40 Mack Truck. This equipment has handled only 13,000 CY concrete and is in excellent condition.

Location: Barren River Dam near Scottsville, Kentucky. Value new \$78,000. Our price for quick sale \$45,000.

### Markwell and Hartz, Contractors

3574 Summer Ave. - Phone FA 7-8494  
Memphis, Tennessee

### WANTED

3900 Manitowoc  
Crane Serial # Later Than 39381  
Advise Giving Details.

### Terry J. Dick Dick Corporation

P. O. Box 10896  
Pittsburgh 36, Pa.

## FACTORY TRADE-INS

- 3 Yd. BUCYRUS-ERIE 88-B HI-LIFT SHOVEL—1952 model in excellent condition. Located in Maryland. . . #77378
- 2½ Yd. KOEHRING 1205 HI-LIFT SHOVEL—1958 model in excellent condition. Located in Maryland. . . #10615
- 6 Yd. LIMA 2400 DRAGLINE—120 ft. boom. Machine in good good condition. Located in Pennsylvania. . . #33406
- 7 Yd. BUCYRUS-ERIE 5W DRAGLINE—walker, in good condition. Located in Illinois. . . #550
- 9 Yd. MARION 183-M DRAGLINE—used only 30 days—carries new machine warranty. Located in Ohio. . . #22296
- 5 Yd. P & H 1400 SHOVEL—in very good condition. Located in Pennsylvania. . . #416000
- 6 Yd. P & H 1600E SHOVEL—in good condition. Located in Pennsylvania. . . #13330
- 6 Yd. P & H 1600E SHOVEL—in fair condition. Located in Pennsylvania. . . #11175
- ¾ Yd. LINK BELT 75 SHOVEL—and hoe. In average condition. Located N. Y. . . #1E952
- ¾ Yd. MARION 32-M HOE—in good condition. Located in New York. . . #21606
- ¾ Yd. MARION 35-M DRAGLINE—in good condition. Located in Florida. . . #22052
- 4 Yd. MARION 111-M DRAGLINE—1951 model in good condition. Located Texas. . . #9294
- ¾ Yd. NORTHWEST 25 SHOVEL—1948 model in fair condition. Located New York. . . #11643
- ¾ Yd. MARION 35-M SHOVEL—1958 model in good condition. Located Kansas. . . #21812
- 20 Ton BROWNING T-20 TRUCK CRANE—1954 model in very

- good condition. Located Ohio. . . #4307
- 2½ Yd. P & H 955-A SHOVEL—1951 model in very good condition. Located in Arizona. . . #14944
- ¾ Yd. MARION 35-M DRAGLINE—1958 model in fair condition. Located in Florida. . . #22037
- ¾ Yd. LORAIN 41 HOE—1949 model in good condition. Located New York. . . #20138
- ¾ Yd. BAY CITY 20 SHOVEL AND HOE—1940 model in poor condition. Located New York. . . #2749
- ¾ Yd. GENERAL 307 SHOVEL AND HOE—1947 model in good condition. Located New York. . . #2808
- 17½ Ton LORAIN MC-4 TRUCK CRANE—1942 model in good condition. Located New York. . . #11087
- 4 Yd. MANITOWOC 4500 SHOVEL—1955 model in good condition. Located Ohio. . . #4631
- 3½ Yd. MARION 111-M HI-LIFT SHOVEL—in poor condition. Located Tennessee. . . #8607
- 4 Yd. LIMA 1601 SHOVEL—1956 model in operable condition. Located Oregon. . . #33206
- ¾ Yd. LORAIN I-20 DRAGLINE—1946 model in fair condition. Located Florida. . . #15071
- 2½ Yd. P & H 855 DRAGLINE—1946 model in good condition. Located in Pennsylvania. . . #7957
- ¾ Yd. MARION 35-M HOE—1956 model in good condition. Located Virginia. . . #21676
- 1½ Yd. NORTHWEST 6 DRAGLINE—1938 model. Located in Florida. . . #2829
- 1 Yd. AMERICAN 375 DRAGLINE—1951 model in fair condition. Located Florida. . . #GS686

You get more with



**MARION POWER SHOVEL COMPANY**  
**MARION, OHIO**

TWX - MRON 0274-U

• WESTERN UNION - WXMS MARION, OHIO •  
PHONE DU 2-1151

P. O. Box 505

- 1—Pioneer 305 W. Portable Plant 33" dehydrator double chain, 48" dehydrator paddle chain, revolving sor. wash. 42x16", 1st/1 twin disc. cl. mot. 3 Pioneer 14 yd. bin.
- 1—Univ. feeder, 40x34 chain feed.
- 2—Barber Greene Bucket loaders, . 800' Barber Greene 24" belt conveyors, head sections and 3rd reduction, tail sec. and int. sections.
- 1—Charles E. Wood auto vortex sand classifier, complete with 48" auto vortex, 12" auto vortex and 36" mud classifier comp. w/train and log ext. & power unit.
- 1—Telesmith 1936 jaw crusher.
- 1—Hawes Bucket Loader.
- 1—Eagle Bucket loader (like new) Model L400B Mid. on Cher. truck.
- 3—Eagle sand screws 24"x18" with elec. power unit pulleys & V-belts.
- 1—Telesmith revolv. drum washer.
- 1—D7 Cat. w/cable control blade.
- 1—Insley excavator with Cat D-311 power unit.
- 1—Cedar Rapids (primary and secondary) portable plant, 1988D jaw crusher, roll crusher, 18"x30" belt, includes dollies and feed bin, powered by Murphy Diesel ME-6, Cat. D4600 and Com'l Rexel Real Power units.
- Also 6" and 8" steel pipe, assorted small gravel bins.
- Canton Aggregate Co., 1243 Raff Rd. Canton, Ohio. Ph. 4778781.

### USED STREET SWEEPERS

3 and 4 yard capacity

All Makes

Various Stages  
of Condition

Priced From  
\$500 to \$5,000

**Casey & Dupuis  
Eqpt. Corp.**

340 Pleasant St.  
Watertown 72, Mass., WA 4-7575

### Used Equipment For Sale

- 2—Euclid T5-18 Scrapers:  
Serial No. 22757, New Recaps on Front, Rear 60%, Power Trains are reconditioned. Newly Painted . . . \$35,000  
Serial No. 22745, Tires 50%, Power Train in good condition \$32,000
- 1—DW-21 8W Series, Very Clean \$15,000
- 1—Euclid 22-Ton, Model 3TD, Excellent . . . \$10,500
- 1—LeTourneau BT Excellent Cond. \$ 8,000
- 1—Euclid Model S-12 Demonstrator; New Warranty
- 1—Euclid Model S-7 Demonstrator; Power Shift, New Warranty

**MINNESOTA BRANCH  
EUCLID DIVISION, GMC**  
3305 Republic Avenue

St. Louis Park - - Minnesota

Phone: WEst 9-2646  
(Evenings, WEst 9-1129)

### MANUFACTURERS AGENTS WANTED

To sell contractors Rollers, Blacktop Seal Coat Machines and Mixers as shown in "NEW PRODUCTS" section.

Many territories open.

**HIGBEE-REICHARD CORP.**

2815 Breckenridge Industrial Ct.  
St. Louis 17, Mo.

### For Sale

1—Bulk Cement Trailer  
Gravity Unloading—never used  
Designed for 50' O.A.L. & 73,280 G.V.W.

Call or write Bill Becker

**Dan Dugan Oil Transport Co.**

Sioux Falls, South Dakota  
Phone ED 4-6011

### FOR SALE

**1956 GMC W-503 TANDEM**  
28-M Axle, V-8 engine, power steering, 12-ft. dump bodies.  
Six to choose from. **\$3,250.00**

**GENERAL TRUCK SALES, INC.**

535 Murfreesboro Road  
Nashville, Tennessee  
Phone CH 2-5521



CONSTRUCTION EQPT. for SALE

FOR  
SALE

(5) Tournapulls

Le Tourneau Westinghouse "B" S/N. 30503, 30504, 30505, 30507, 30512. Purchased new 1958. Equipped with Cummins Diesel Engines and have approximately 300 hours each.

(1) Cat D9

S/N 19A-1337, complete with 95 Dozer power control unit, etc. Purchased new 1958.

(1) Truck Scale

Winslow 30 ton complete. Very good condition.

(1) Lima Crane

Model 34, 3/4 yd. S/N 328320. Very good condition.

R-W Construction Inc.

3218 W. Fond du Lac Ave.  
Milwaukee 10, Wis.  
UP 1-3140

Koehring  
Shovel

Model 376, 1 yard .....\$4850

Sauerman  
Slack Line

1 yard bucket, 90' Mast \$6,500 comp.

Apron Feeder

36"x14' AW with hopper .....\$1,000

Asphalt Mixer

Quick Mix, 500 lbs. ....\$850 comp.

Sand Screw

24"x30" Eagle .....\$4,850

BADGER HIGHWAYS  
COMPANY, INC.

Box 358, Menasha, Wis.  
PA 2-6448

WRECKING FOR PARTS

the following tractors and motor graders:  
Caterpillar "D2", "D4", "D6", "D7", "D8",  
International "TD6", "TD5", "TD14",  
"TD18", "TD24"; Allis-Chalmers model "M",  
"L", "HD7", "HD-10", "HD14", Motor grader  
Adams No. 511, 512; Galion No. 102, 116;  
Caterpillar No. 11. Used hydraulic and cable  
dozers, hydraulic loaders. New replacement  
track rails, track rollers, pins and bushings,  
grousers, seals, and thousands of other parts  
available at very low prices. Write or phone  
and ask for Morris Goodman, always at your  
service. Free 1961 catalog.

ACME TRACTOR SUPPLY COMPANY  
1041 North 14th Street, Lincoln, Nebraska  
Phone: 432-2827

IMMEDIATELY AVAILABLE

1—Model CA245 Noble Automatic Cement and Aggregate Batching and Mixing Plant which is equipped with one 2 cu. yd. dual-type hopper with separate cement batcher, cement hopper, one 5-beam back balance type scale for aggregate, one single beam back balance type scale for cement, control stand. Also with the plant are the following items:

- 1—12" Cement Batch Feed Screw
- 1—200 Gallon Water Tank w/Calibrations
- 1—Admix Dispenser
- 1—Panel Board
- 1—Noble Mixer Timer
- 1—Dry Batch Gathering Hopper
- 1—4 cu. yd. Gob Hopper w/Air Operated Gate
- 1—Set of 50 Pound Test Weights
- 1—Bottom Dump Truck Hopper w/12" Screw Conveyor
- 1—12" x 7" Bucket Elevator
- 1—1500 cu. ft. Bulk Cement Silo
- 1—2000 bbl. Bulk Cement Silo
- 2—56S (2 cu. yd.) Front Charge Tilting Concrete Mixers
- 1—Rescreen assembly including rock ladders, etc.

Price including piping, electrical materials, and winterizing equipment, f.o.b. trucks at the Trinity Dam site.....\$64,000.00

1—30" x 336' Inclined Conveyor complete with catwalk, price f.o.b., trucks at Trinity Dam site .....\$15,000.00

Trinity Dam is 50 miles West of Redding, California

TRINITY DAM CONTRACTORS

10 West Orange Avenue South San Francisco, Calif.  
Phone: PLaza 6-0300 - Ext. 279

WANTED

THE FOLLOWING USED EQUIPMENT:

- ONE portable batching plant. Must have its own tires and be movable without disassembling. Needed output 30-40 Cu. y./h.
- TWO 125 Cfm. air compressors.
- TWO 250 Cfm. air compressors.
- ONE 5 Ton truck-mounted crane, with 60' boom.
- THREE moto mixers (4 to 6 y).
- ONE Tire-mounted front loader.

Send price, full details and photographs to:

TECNODIN C.A.

Apartado del Este 4014  
CARACAS - VENEZUELA

FOR SALE

LIMA 703 SC CRANE

S/N 334515, 2650 Operating Hours with 6082 G.M. Diesel, torque converter; 165' boom, 30' Jib, mid-point boom suspension and 2 drum boom hoist with 10 part reeving and 4" (in lieu of 3" std.) gantry head shaft. Air controls, automatic boom hoist brake, maximum counterweight, third drum (never installed), fairleads, 3 sheave 50 ton hook block and many additional extra features. Machine in perfect operating condition and like new appearance. Location: Barren River Dam near Scottsville, Kentucky. Price: \$47,000. (Will consider part payment in trade for good 15-20 ton used truck crane).

Markwell and Hartz, Contractors

3574 Summer Ave. - Phone FA 7-8494  
Memphis, Tennessee

FOR SALE

One 1952 Used  
International Harvester  
Model TD9 Crawler Tractor

With standard equipment including Hough loader.

Price .....\$5,000.00

Terms can be arranged

PHILLIP E. FREED

38 S. Dearborn St. Chicago, Ill.  
Phone: STate 2-7032

FOR SALE

- 1—Model 80 Lorain Drag Line (1943) 1 1/2-Cyd, G.M. Diesel
- 1—Model 38B Bucyrus Erie Drag Line (1953) 1 3/4-Cyd; Cat. 13,000
- 1—Model 40A Marion Dragline (1949) 2 1/2-Cyd; Cat 17,000
- 1—35-Ton Rogers Low Trailer
- 1—Central Concrete Batching Plant (Johnson)
- 400-Ton Aggregate; 2,000-Bbl Cement
- 1—Ransom Paver (for parts only)
- 1—Blaw-Knox Asphalt Paver

Financing Can Be Arranged

WRIGHT INDUSTRIES, INC.

P.O. Box 5333, Lansing 5, Michigan  
Ph. IV-7-5496

## LATE SUMMER SPECIALS

International TD-9 Cherry Picker w/  
Trackson Swing Crane, Like New  
.....\$4950.00

Pettibone 1½ Yd. Front End Loader Model  
125-AD #432 w/GM Diesel-Four wheel  
Drive, 13:00x24 Tires, Year 1956, Like  
new .....\$6650.00

Bucyrus-Erie 15B #103367, W/Backhoe  
Boom, Tractor Type, Heavy Duty Under-  
carriage, Only slightly used. ....\$8850.00

TD-9 International Tractor w/hydraulic  
Dozer, #TD9-63049. This Late Model  
Dozer is in excellent cond. ...\$6950.00

TD-18, TD-14, D6 and D7 Cherry Pickers.

**Ben Winer Trucks & Equip.**

2885 W. Market St. - Tel. TEmple 6-4717  
Akron 13, Ohio

## BARBER-GREENE FINISHER

Heavy Duty Model SB 60  
Pneumatic tired. New condition,  
guaranteed. Has handled only 20,000 tons.

**The McLean Co.**  
3525 Lakeside Ave.  
Cleveland 14, Ohio

## FOR SALE

1-Bucyrus-Erie 200W Monaghan Dragline with  
Cooper-Bossmar Diesel Engine. Location—  
Ohio.

2-Lorain 820 Draglines—one with Cat.  
D-13000 and one with Waukesha 6 WARD  
engine. Location—Sydney, Nova Scotia and  
Hamilton, Ontario.

1-Manitowoc 4300 Dragline with Cummins  
NVH15 engine. Location—Sydney, Nova  
Scotia.

WRITE OR PHONE:

**HECKETT ENGINEERING CO.**  
BUTLER, PENNSYLVANIA, U.S.A.

**STEEL SHEET  
PILING  
by DIALING**  
Call St. Louis Collect  
Chestnut  
1-4474

RENT,  
SELL OR  
BUY

FAST  
SERVICE

LOW  
RATES

ALL  
LENGTHS

ALL  
SECTIONS

NATION-  
WIDE  
STOCKS

PIPE  
H-BEARING  
PILE

PILE  
DRIVING  
EQUIPMENT

NORTH,  
SOUTH,  
EAST or WEST

**MISSISSIPPI VALLEY EQUIPMENT CO.**  
(WHISLER STEEL PILING CO.—Affiliate)  
1908-D Railway Exchange Bldg.  
St. Louis 1, Mo. Chestnut 1-4474

## FOR SALE - TRADE OR RENT

1959 595 C American Crane with 32" Pads, 55' Boom, 1½ Yd. Drag  
Bucket - Like New. ½ Yd. Wayne.  
Wagon Crane, 30' Boom and ½ Yd. Drag Bucket.

2 D8's "U" Series, with Angle and Straight Dozers. Hyster, Late  
Model, 16,000# capacity, new motor, excellent condition. Ford  
Backhoes & Trench Hogs.

7 TD 18s Dozers

1 T-6 Loader, 1 TD-9 Dozer

1 HD-20 Push Plate Torque Converter

2 D4 Towinapulls

4 Baker, Jaeger & Hough ½ Yd. Loaders.

1 Tractomotive Front End Loader

1 Barber Greene Ditcher

1 Littleford Oil Heater for Patching

1 Hyster, Pneumatic Tires Late Model 16,000 lbs. Cap. New Motor.  
Excellent Condition.

2 Sets of Booms

1960 3 Axle Martin Lowboy, empty weight 11,000 lbs. Flat Trailers,  
Pole Trailers, Truck Tractors, Contractors Storage Vans. A variety  
of 1½" and 2" Pumps, Concrete Vibrators, Wacker Rammers,  
Air Compressors, Air Hammers, Rollers.

## DUN-CO EQUIPMENT CO.

P. O. Box 1081, Springfield, Illinois  
Phone Lakeside 8-8426

## WE CAN TRAIN YOU FOR BIG-PAYING JOBS as Operators or Mechanics of Heavy-duty Construction and Earth-moving Equipment

OPERATORS CLASSES start every Monday.  
Learn how to operate heavy road machin-  
ery, cranes, bulldozers, etc., by actual "on-  
the-job" training. 5 to 19 week courses.

MECHANICS CLASSES offer 13½ week in-  
tensive course. Learn how to maintain and  
troubleshoot construction and earthmoving  
equipment.

Complete catalog and reservation facts  
FREE. Approved for veterans.

**GREER**

TECHNICAL INSTITUTE  
Attn: K. M. Hutchison  
Box 368, Braidwood, Ill.

## FOR SALE

CONTRACTOR's used equipment, priced to sell;  
very good to excellent condition; 120 yd. Johnson  
semi-automatic concrete batching plant (\$16,000);  
3,500 sq. ft. Economy steel forms for concrete  
walls (\$5,000); 30,000 sq. ft. used Irvington  
standard all steel unit forms for concrete form  
work, excellent condition (\$15,000); Littleford  
Kwik steam generator for pile driving (\$5,000);  
Bome disc plowing harrow, model YMR 24-30  
(\$1,800); 10 ton, 3 wheel Huber roller (\$3,250);  
2 6-inch Moretrach wellpoint pumps with 600  
ft. pipe main system and all accessories (\$3,500);  
Northwest crawler crane, SN 12527 (\$17,500);  
P & H crawler crane, with shovel front and  
backhoe attachments, model 855-B, SN 10084  
(\$15,500); 3 TD-24 bulldozers, SN 1914, 2024,  
4268 (\$4,500 to \$8,000 each); contractor's field  
office trailers (\$1,800 to \$1,500 each); crane  
buckets, ¼ yd. to 2½ yd. (drag, clam and  
orange peel, etc.—various low prices); 2 1½ yd.  
Multi-Foots Pavers (\$2,500 each); Gailen Motor  
Grader (\$1,000); Adams motor grader (\$1,000);  
Cement bulk tank trailer (\$1,700); bulk cement  
car unloader (\$1,750); HOUGH PAYLOADER,  
Model HMG, gas engine & torque converter—  
2 yd. bucket, SN 928230, 4 wheel drive on rubber  
(\$5,000); 2 ¼ yd. Lorain shovel fronts (\$1,250  
each); BAY CITY ¼ yd. shovel front (\$1,250);  
1 ¼ yd. Lorain backhoe (\$1,000); 2 2 yd. P&H  
shovel fronts (\$2,500 & \$3,000 each); 2 yd.  
P&H backhoes (\$1,500 & \$2,000 each); Scheldt  
Stone Grapple, type 6-3 (\$750); Federal No.  
82A Sodmaster (\$375); Clipper concrete saw, model  
C28 (\$350); Cement Gunite machine (\$875).  
Write P. O. Box 402, Barre, Vermont. Phone  
Granite 6-4183.

BUY      SELL      RENT

IN STOCK - DISMANTLED

## TEMPORARY BRIDGE BEAMS

HEAVY LONG  
OR SHORT SPANS

**LEOPOLD COHEN IRON CO.**  
3000 S. Kedzie Chicago 23, Ill. Bl 7-6336

## FOR SALE

**Erect Cranes - Draglines  
Shovels - Backhoes**

LATE MODELS—EXCELLENT CONDITION  
Manitowoc 2000B, 3000B, 3500, 3900 and 4500.  
Northwest 25, 6, 80D and 95 Models.  
Bucyrus-Erie 22-B, 38-B, 51-B, 54-B.  
Marion, Koehring, Link-Belt, Lorain, Lima and  
P&H long booms, wide long crawlers, diesel  
powered. In equivalent sizes available.

**James C. French**

SPECIALIZING ON:

Cranes - Drag - Clams - Shovels - Backhoes  
P. O. Box 188 - 226 Berry Pkwy.  
Park Ridge, Illinois      Talcott 3-4927

## REAL BUYS!

3 LATE MOD. #200 MISS. RIVER TRACTORS with 330 HP CUMMINS Diesels, 29.5 x 29 rear, 14 x 20 front tires; cable control units hydraulic pumps and load transfer rams, each with 30 yard struck measure pull type WOOLDRIDGE CARRYALL SCRAPERS with 33.5 x 33 rear and 29.5 x 29 front tires.

Also, 7 ALLIS-CHALMERS HD-21 Tractors, some with front and rear PUSH PLATES, some with DOZERS, 1 w. rear mounted RIPPER.

Present location WYOMING. (3 of A-C Tractors in Montesano.)

PHONE — WIRE — WRITE:

### Tri-City Truck & Equipment Co.

P. O. Box 216 — Phone 5721  
MONTESANO, WASHINGTON

## ATTENTION

### CONTRACTORS, MONUMENTAL DEALERS AND JOBBERS

(A Chance of a Life Time)

PRICED TO SELL, ALL OR ANY PART OF 4 million tons of Barre Granite (already quarried), for crushing, highway use, bridges, head walls and rubble masonry.

ALSO, 3 million lineal feet of Barre Granite for curbing, and building work. (Already quarried)

ALSO, a 30 acre Barre granite quarry of light and dark granite that has been opened and quarried.

For Information or Inspection

Write To—Capital Hill Quarry Company  
Barre, Vermont

Or Call—Fernando Saldi Barre, Vermont  
Telephone GRanite 6-5573 or  
Office, Telephone 6-8541

(Any Reasonable Terms Agreeable)

### FOR SALE

#### DRAGLINES - SHOVELS - CRANES

All Makes and Models,  
½ yd. to 35 yd.

#### EUCLIDS:

Rear, Bottom Dumps and Scrapers

"Other equipment available not listed above"

#### WILLIAM LUBRECHT, III Construction Equipment

311 W. Diamond Avenue Hazleton, Pa.  
Glodstone 5-4041 5-0258

## IMMEDIATELY AVAILABLE

3—750KW G.M.C. Diesel Generating Sets.

Units powered by G.M.C. Model 12-567A Diesel Engines rated at 1080 B.H.P. at

720 R.P.M. Units are skid mounted and self contained, including radiators. Voltage—

2300. Plants complete f.o.b. cars or trucks at Oroville, California. . . . \$39,600.00 Ea.

### Contact

## OROVILLE PROJECT CONTRACTORS

10 West Orange Avenue South San Francisco, Calif.

Phone: PLaza 6-0300, Ext. 279

### FOR SALE

- 1—¾ C.Y. Shield Bantam Crane-Crawler-with Crane Boom and Back Hoe. ¾ C.Y. Drag Bucket. Serial Number of Bantam #5884. LeRoi D-176 Engine S/N 25x27517. A-1 condition.
- 2—Ditching Machine Model #221-Ladder Type-Waukesha Gas Engine S/N-107969. Machine Serial Number 2089. Depth 8 L.F. to 12½ L.F. 14" to 36" Buckets. Parsons.
- 3—Ditching Machine Model #200. Wheel Type-International Diesel Engine. 20" Bucket. Serial Number-UDCB-1993485. Parsons.
- 4—International #360 Tractor. With Arp Trench Hog—6" to 14" Cutters. S/N 5418.
- 5—Back Hoe Boom and Bucket for 22B Bucyrus-Erie Crane.

### GOODWIN-McELROY CO., INC.

CONTRACTORS AND SUPPLIERS

Box 256. MT. ZION, ILLINOIS  
Telephones: Mt. Zion 2112, 2851 or 3440

### FOR SALE

- 2 Asphalt Plants w/5,000 lb mixers
- 1 Asphalt Plant Continuous Mixer (approx. 120 tons per hr.)
- 1 Parsons Treacher, Model 310
- 2 Buffalo-Springfield Tandem Asp. Rollers 8-10 Ton
- 1 Galleon Tandem Asp. Roller 8-10 Ton
- 1 Buffalo-Springfield Asp. Roller, 3 Wheel
- 1 BICO SP Roller
- 2 Barber-Greene Finishers 879A
- 1 Cat. D8 Tractor w/Wood Roadmixer Model 54
- 1 Barber-Greene Bucket Loader Model 845
- 1 Int. YD-18 Angledozer
- 1 Bucyrus-Erie, Crane, Model 22B
- 2 Backhoes for 15B & 22B
- 2 Int. 10-9 Wheel Tractors
- 1 Cat. 12 Motor Grader
- 1 Cat. 26 Front End Loader
- 4 1958 Ford F600 Dumps
- 1 Etnyre Distributor, 2100 gal.
- 1 Int. 300 Front End Loader & Backhoe
- 1 Mack Tractor & 25 Yans Rogers Trailer
- 1 F-8 Ford Tandem Tractor
- 10,000 L. F. curb & gutter and Road Forms, concrete

Other construction equipment too numerous to mention.

### F.D. CLINE PAVING COMPANY

HU 4-6115, P. O. Box 3376  
Fayetteville, N. C.

### PORTABLE 4XD IMPACT CRUSHING PLANT

(Used three months)

Replaced by Unit of double its cap. Equip. w/low level feeder, 36" swing hammer rotor, delivery conveyor, tandem rear wheels, pneu. rubber tires. Cap. depending on gradation 150 to 200-T. hourly using 200 h.p. net cont. power. Unit presently less power & drive. Location St. Louis. This plant almost like new.

### NEW PORTABLE IMPACT CRUSHING PLANT

w/SCALPING TYPE FEEDER

Equipped w/10 yd. hopper, delivery conveyor, pneu. rubber tires. Cap. 150 to 200-T. hourly on medium hard limestone: Cap. 200 to 250-T. hourly on Fla. rock. Location Florida. Now on consignment for quick delivery.

### NEW 4XD CENTER FEED

FINE REDUCTION

### HAMMER CRUSHER

Cap. 35 to 40-T. hourly on intermediate aggregates & ag-stone.

Delivery 2-3 wks. from St. Louis.

PROMPT DELIVERY—UNITS

SUBJECT TO PRIOR SALE

GRUENDLER CRUSHER &

PULVERIZER CO.

2915 N. Market St., St. Louis, Mo.

(Jefferson 1-1220 - Mr. Kummer)

## CONCRETE COVERS IN STOCK

Width up to 33 ft. wide

Immediate Shipment

Call for Ben Slomowitz

### Lorraine Trading Corp.

120 Hamilton Ave.  
Brooklyn 31, N. Y.  
Ph. Main 4-7156

## DRAGLINE MATS

Any Length, Width or  
Built to Specifications

We build them a little better for a little less.

STRICTLY HARDWOOD.

Also LUMBER and PILING

### Kent Piling Co., Inc.

CHARLES KENT, PRESIDENT

Phone Days: Amite 2641 - 2644 - Night 8454

FLUKER, LOUISIANA



CALL UPON MUTUAL FOR THE NATION'S LARGEST

# PARTS STOCK

Headquarters All Heavy-duty Equipment, Supplies & Parts

• DUMP TRUCKS • LOADERS • CRANES • ENGINES

Lowest Prices - Complete Satisfaction Guaranteed

**NEW and Guaranteed REBUILT  
ENGINES**

Completely Dynamometer "Run-In"  
and Tested in our own modern ex-  
tensive rebuilding shops.

- HERCULES
- CUMMINS
- CONTINENTAL
- WAUKESHA
- GMC DIESEL

2000 S. WABASH AVENUE  
CHICAGO 16, ILLINOIS

25TH YEAR OF QUALITY SERVICE TO  
THE HEAVY EQUIPMENT INDUSTRY!



Telephone: CAumet 5-3500

## FOR SALE OR RENT

Used CEDARAPIDS 20x36 Portable Primary Jaw Crusher Plant — 36"x12' Feeder — Tandem Rear Axles with air brakes — International UD-18 Diesel Power. Overhauled and ready to go.

Used Lorain L-41 Diesel Crane — 40 ft. boom. — long and wide crawlers with 30" shoes, Caterpillar diesel power, has been equipped with roller bearing drum shafts. A good, sound machine at a right price. With or without hoe attachment.

Used P&H 255A ¾ yd. Diesel Powered Crane and Hoe Combination. Excellent condition. Hoe now installed. Ready for work.

Used Insley Model 1 ¾ yd. Crane and Hoe, GM diesel power, 40 ft. boom with tagline, 30" track shoes. Another good one at fair price.

For your equipment needs — Call or write

**THE G. W. VAN KEPPEL COMPANY**

2461 PENNWAY

KANSAS CITY 8, MISSOURI

Phone GRand 1-1540

## MARTIN-ROASA SPECIALS

Ready to Go Used Equipment Buys

- 4 DW - 15 S/N 70C1833 - 59C235 - 59C278 - 59C302. All in excellent condition, with rubber from good to excellent - your choice \$17,500.00 Each
- 1 International R-185 Truck & Martin R4TL Lowboy, Air Brakes, 5 Speed Transmission & 2 Speed Aux. Trailer rated at 27 ton - 90% rubber - Excellent condition throughout \$8,650.00
- 1 Tilt top Transport Trailer Model XTT-13. 13 ton Tandem Axle. Vacuum or air Brakes. Excellent \$2,250.00
- 1 GMC Truck Mixer 6 yd. Separate Engine Drive. Very Clean with a Good Engine. \$2,800.00
- 1 4,000 Gallon Water Wagon. Completely Rebuilt. Single Axle Rear with Fifth Wheel. New Joeger 2" Pump & All Piping Rigged for 3 Way Pumping. Like a New Unit. \$2,650.00
- 1 Marmion - Herrington Converted F800 Ford. All Wheel Drive. Dump Box, V Plow, Underbody Blade, Angle Plow & All Hydraulics. Very Good Condition. \$5,450.00

Call, Write or Come in for Further Details

**MARTIN-ROASA TRACTOR & EQUIPMENT CO.**

2710 6th Street S. W., Cedar Rapids, Iowa

Phone EMpire 2-1145

## HEAVY EXCAVATION EQUIPMENT

LARGE DRAGLINES, SHOVELS, CRANES,  
ROTARY DRILLS, EUCLID DUMP TRUCKS  
FRANK SWABB EQUIPMENT COMPANY, INC.  
Hazleton National Bank Building, Hazleton, Pa.  
Phone GL 5-3658

## SIGN HOLDERS for TRUCKS

TRANSIT BUS STYLE FRAMES

for changeable copy  
ADVERTISING CARDS → FREE PHOTO  
ALBUM  
THE YARDER MANUFACTURING CO.  
714 Phillips Ave. Toledo 12, Ohio  
Greenwood 4-5471

## FOR SALE

L-B H.C.-98A—35 Ton Crane, 110 boom,  
30' jib; 4-axle; power lowering, Waukesha up and down, excellent condition. Price right.

Lima 35 ton truck Crane—100' boom—  
15' jib—Wank. up and down. Power lowering 1956 Model; excellent condition.

(Two) N.W. 20 ton on 8' carriers—excellent condition. 40 ton American—4 axle, 1958; 150' boom—30' jib.

Asphalt plant, H. & B. Mobile 60;—6000 lb. batch; This is most portable; even the heater and insulated tanks on rubber; oversize dryer; semi-electric; twin G.M. engines on dryer; about 100,000 tons been through. Price is right — condition perfect.

(1) 4000 lb.; C.R. all electric very good.

(1) Batch-omatic Barber Greene excellent.

(1) 848 B. Greene, diesel power, steam heated—dust collector gradation unit; complete—6 yrs old but good shape.

Several Barber Greene 879A finishers re-conditioned from \$4500 up \$7500.

(2) B. Knox P.F.—150 pavers excellent. Complete, practically new, concrete spread, pavers, finishers, spreaders, floats & vibro—12' planers. Batch Plant (2) stop; & Truck mixers.

(2) N.W. #6—draglines 60' boom, Murphy diesel, standard track, completely rebuilt—\$20,000 each—shovels and hoe attachment available.

(1) 80C-Cat grader (1) 70D-Cat. Grader excellent. Bucyrus-Erie 238-B shovels—\$20,000 ea.

3 D.W. 21 series D-86E-athey PR-21 rear dump; used 3000 hrs.

## GILL EQUIPMENT COMPANY

Box 708 - Phone MO 6-3512

MIAMI 56, FLORIDA

## FOR SALE

MARION M362 1½ yd. crawler shovel, serial #8617, Caterpillar D13000 diesel engine—Florida location—\$13,500.00.

LORAIN MC-414 truck crane—\$13,900.

P & H 255—ATC 20 ton truck crane—\$14,500.

PETTIBONE MULLIKEN Rubber Tired 1 yd. Speed Swing Loader—1 year old—\$11,875.00.

## GLEASON EQUIPMENT, INC.

3030 South Ashland Ave., Chicago, Ill.  
CLItfide 4-3730

## FOR SALE . . . LARGE DIESEL GENERATORS

A complete 16,470 k.w. modern power house is offered in its entirety with plant equipment common to all units.

OR

Units may be purchased separately with all switch gear and accessories necessary for individual operation. This equipment was purchased new from the respective factories for temporary power on our Glen Canyon Dam project and the Town of Page, Arizona until public power was made available. They have seen limited service and are in excellent condition.

### PLANT CONSISTS OF:

Four 1360 k.w. Fairbanks Morse 4160 volt, 60 cycle, 720 r.p.m. generators direct connected to 12 cylinder Model 38D-1/8 opposed piston diesel engines. Individual radiator cooled. Units put on line in 1958.

Ten 1105 k.w. "English Electric Company of Canada" 4160 volt, 60 cycle, 720 r.p.m. generators direct connected to "English Electric" model 16SV exhaust turbo-charged 16 cylinder diesel engines. Individual radiator cooled. Units put on line in 1958 and 1959.

ALL UNITS STILL ON ORIGINAL FOUNDATIONS.

SUBJECT TO INSPECTION AND PRIOR SALE.

Send for Equipment Sales Bulletin . . .

## MERRITT - CHAPMAN & SCOTT CORP.

260 Madison Ave., New York 16, N. Y.

ORegon 9-3500

For Further Information Contact: ZIM T. PEARCE—Manager of Equipment Sales

## FOR SALE - FOR SALE GOOD USED CONSTRUCTION EQUIPMENT

- 2 - AC Mfr. Scrapers, Model TS160, Diesel, 1200 hrs. . . . . Ea. \$20,000
- 2 - AC Tractors, Model HD7, Hydr. Dozer Blade, Diesel . . . . . Ea. 5,500
- Lorain Truck Crane, Model MC414, 60' Boom, Crane & Carrier Gas. . . 18,000
- Lorain Truck Crane, Model TL20, 45' Boom, Crane & Carrier Gas . . 8,000
- AC TractorLoader, Model TL20D, Good Tires, 2 1/2 Yd., Diesel, 1000 hrs. . . . . 18,000
- Lorain Crane, Model L56, 80' Boom, Jib, Air Controls, Wide Cots, Diesel . . . . . 30,000
- Lorain Crane, Model L26, 45' Boom, 3/4 Yd. Backhoe attachment, Diesel . . . . . 18,000
- Delmag Pile Hammer, Model D5, 2 sets Leads, Diesel . . . . . 6,000
- IHC Tractor, Model TD18, Hydr. Dozer Blade, Diesel . . . . . 9,000
- Dewatering System - 2-8x6 Pumps Diesel, 8x6 Pump Gas w/spare engine, Jet Pump Gas, Pumps, Header & Discharge Pipe, Fittings, etc. . . . . 25,000
- Concrete Form Panels - Corners, Channels & Acces., Approx. 5000 Sq. Ft. . . . . 3,500

1" to 4" Pumps - Elec. & Gas Powered, Generators, Conc. Vibrators, Hand Tools, Air Compressors, Air Tools & Hose, Clim Buckets, Conc. Buckets, Drag Bucket, Cl Pipe Tongs-10" to 24", and many other misc. items.

We operated with a Preventive Maintenance System, all equipment in GOOD CONDITION. All available for inspection, additional information and photos forwarded upon request. Terms: Cash-F.O.B. our yard, 1055 Grant Street, Akron, Ohio and subject to prior sale.

### DeLuca Construction Co.

1055 Grant Street, Akron 11, Ohio  
Phone: PA 41271 or UN 45129

### CHAIN LINK FENCE

Direct from factory to you. Wires, posts, rails, fittings. Will ship wire or any accessory separately. Write concerning dealership in your area. Will ship anywhere. Contact:

TE 3-7587, W. D. KEMP,  
944 Main St., Beaumont, Texas

## FOR SALE

OR  
LEASE

### BROWNING TRUCK CRANE S/N 4300 60' BOOM & JIB

LOCATED

ILLINOIS CONTRACTORS' MACHINERY  
INC.

Rte. 83 & Madison — Elmhurst, Ill.  
TErrace 4-7100 — TUxedo 9-0871

## FOR SALE

43,000 5 GAL. GAS CANS  
NICE CONDITION NO INSIDE RUST

Repainted Red . . . . . \$1.75  
Repainted O.D. . . . . \$1.50  
Not Repainted . . . . . \$1.25

Check Must Accompany All Orders Under 100 Cans.

### BRENGAR CO.,

5440 N. Meridian St.  
Indianapolis 8, Indiana

## FOR SALE

### 2 FONTAINE BOTTOM DUMP TRAILERS

2 Fontaine Bottom Dump Trailers, Model BD20, S/N 1008 & 1009, 20 CY capacity, 1800x25 lug type tires with 75% rubber, air brakes, used approximately 1 year only, location: Memphis, Tenn. Price new \$11,300. Our extraordinary bargain price \$3,000 each or \$5,500 for two.

### Markwell and Hartz, Contractors

3574 Summer Ave. - Phone FA 7-8494  
Memphis, Tennessee

## RENT-SALE-TRADE (FOR CRANES)

8—Euclid 23TDT Scrapers, GMC Torque C.—18-23 Cu. Yd.

4—D8's 14 and 15A Series w/dozers

3—D8's 2U Series

4—Cat Scrapers No. 80, Large Tires, 18-23 Yd.

2—D6 Dozers—(2) No. 12 Graders

8—Euclid 8TDT Scrapers, Cummins, 18-23 Yd.

1—No. 25 N-West Combination Shovel Crane

1—50 Ton Compactor w/D8—(1) Ditcher

1—30 Ton Truck Scales—(2) FP Scrapers

1—10 Ton Roller—1 Large Flat Roller

Rebuilt Condition—ready for work

TERMS: Very liberal to Responsible Person

Located Jeffersonville, Ind. 2 mi.

north of Louisville, Ky. Rt. 31 E

## A. L. DOUGHERTY CO.

9938 S. Western Ave.

Be 3-3118

Chicago, Ill.

## FOR SALE

212 Cat. Motor Grader 1U306  
TD18A IHC Tractor w/Dozer  
3—Caterpillar DW20 Motor Scrapers  
2—AC-Model 300 Motor Scrapers  
HD11E AC Tractor w/Hyd. Dozer (2)  
HD11B AC Tractor with Hyd. Dozer  
2 AC-TS 160 Motor Scrapers  
LD-14 Tractor with Cable Dozer  
HF Hough Loader  
D-4 Cat. Loader S/N 7U16702  
AD-4 AC Motor Grader (3)  
112 Cat. Motor Grader 3U2799  
12 Cat. Motor Grader 9K2381  
1-C-106 Pull Type Scraper  
101 Gallon Motor Grader  
108 AC Pull Type Scraper  
TS 160 AC Motor Scraper (2)  
TS 300 AC Motor Scraper (2)  
DW20 Cat. Motor Scraper (3)  
T6-K Michigan Motor Crane  
1-C-108 Pull Type Scraper  
K-12 Insley Dragline (2)  
P&H 655B Shovel  
Backhoe for HD5G or HD6G  
120 Hopte on Chev. Truck

## Dukehart-Hughes

TRACTOR & EQUIPMENT  
CO., INC.

4330 E. 14th St.  
DES MOINES 13, IOWA

## CLEARING HOUSE SECTION

### TIRES! TIRES! BRAND NEW — ALL LATE CONSTRUCTION at TREMENDOUS SAVINGS FROM ROSELLE PARK TIRE CO. THE EASTERN SEABOARD'S TIRE HEADQUARTERS!

NYLON TRUCK TIRES				All Tax
Conv.		Mud & Snow		Inc.
\$19.95	670-15-6	\$20.95		Credit for
21.95	700-15-6	24.50		phone call
17.95	600-16-6	19.50		if purchase
19.50	650-16-6	21.80		is made
21.50	700-16-6	24.50		
NYLON - TRUCK TIRES - NYLON				
825-20	\$47.50	1000-20	\$72.50	All Tax
900-20	\$7.50	1000-22	79.50	Inc.

### SPECIAL GOODYEAR CUSTOM TUBELESS 670-15 6 PLY \$15.95 Tax Inc.

NON DIRECTIONAL JEEP DESIGN				All Tax
600-16-6 Myl 1st.....	\$15.95	750-20-10 Ry 1st.....	\$37.80	Inc.
700-16-6 Myl 1st.....	\$21.80	825-20-10 Ry 1st.....	\$44.50	WRITE
750-20-8 Ry 1st.....	\$34.50	1200-24-16 Ply Ry BLEM....	\$85.00	FOR
				SIZES
				NOT
				LISTED
NEW BLEM		TBLS TRUCK TIRES		ALL
7-14-5-8 Ply.....	\$21.50	7-22-5-8 Ply.....	\$26.50	TAX
8-14-5-12 Ply.....	\$28.50	8-22-5-8 Ply.....	\$31.50	INC.
7-22-5-6 Ply.....	\$24.50	8-22-5-10 Ply.....	\$34.50	F. O. B
				ROSELL
				PARK,
				N. J.

One of the East's Largest Tire Suppliers!

### ROSELLE PARK TIRE CO.

CHestnut 5-5100

LOCUST & WESTFIELD AVES.

ROSELLE PARK, NEW JERSEY

### ASPHALT PLANT AND BITUMINOUS PAVER FOR SALE—WILL SACRIFICE

- 1 - PIONEER MODEL 51 ASPHALT PLANT, complete with one 10,000 gallon tank, one 6,000 gallon Emulsion tank, conveyors, dust collector, motors, etc. Complete - Ready to run - in excellent condition.
- 1 - PIONEER MODEL 11 VIBROMATIC BITUMINOUS PAVER - 3 years old - in excellent condition.

W. F. Rippel

### THE WESTPORT MACH. CO

1801 Cherry Hill Rd. - MULberry 5-0402

BALTIMORE 30, MARYLAND

### FOR SALE PAVER

- 1—Barber-Greene, Model 879A, Serial #879-114-53, New in 1953. This machine is in good condition. Extensions to 12 feet.

### PAVER

- 1—Pioneer Vibromatic Bituminous, Serial #11-171, New in May 1957. This machine is in excellent condition. Extensions to 14 feet.

### SWEENEY BROTHERS TRACTOR COMPANY

Fargo, North Dakota

Phone AD 2-3305

### FOR SALE

25 yd. Bucyrus-Erie Electric Dragline. Excellent condition.

WILLIAM LUBRECHT, III  
CONSTRUCTION EQUIPMENT

311 W. Diamond Ave. Hazleton, Pa.  
Telephone Gladstone 5-4041-5-0253

### 18 V PIONEER DUPLEX PORTABLE CRUSHING AND SCREENING PLANT

10" x 24" RD Jaw Crusher GMC Diesel  
24" x 10" RD Roll Crusher Pneumatic Tires  
30" x 8' 3/4" Deck Screen Excellent condition

DARIEN CORP. 60 E. 42nd St., N.Y., N.Y.

## FOR SALE

### GRADALL

1958 Model M2460, Serial No. NP 43412 with: GMC 3-71 diesel; long track—24" grousers; 60" bucket; 15' boom inserts; Excellent Condition—1200 hrs.

### CEDARAPIDS

Model FA Portable Asphalt Plant Ser. No. 12563 with Barber Greene Dryer and Dust Collector. Cedar Rapids 3 Compartment Cold Feed Hopper, Kewanee Boiler.

### GARWOOD

Buckeye Model 302A Drainage Ditcher Ser. No. 945—Excel. Cond.

### ILLINOIS ROAD EQUIPMENT CO.

1310 E. Jefferson Street  
Springfield, Illinois  
Phone: KI 4-1731

## For Sale

Used Bucyrus Erie Shovel Front for Bucyrus Erie 22 B. Complete with 3/4 bucket ready for use. Good condition. Price \$950.00.

Location: Salem, Va.

Contact by Mail

### Richard Spurgeon

Lansdale Rd. 2, Pa.

Phone Center Point Pa.

JUNo 4-4475

8-10'x78' Dryers—2'3'4'5'1/2' Symons and Telamith Cone Crushers—3648-4042-4872 Jaw Crushers and smaller sizes—48" Gyrotory & 20" Gyrotory Vibrating Feeders—other types of Feeders—Eagle Fine & Coarse Material Washers—Dixie Non Clog moving plate Hammermills—Asphalt Plants—Jaw—Cone—Gyrotory—Roll Double and Triple—Hammermill and Impact Crushers—Ball—Rod—Tube Mills—Screening, Washing and Crushing Plants, Classifiers, Compressors, Conveyors, Cranes, Drills, Dump Cars, Dredges, Feeders, Hoists, Motors, Generators, Kilns, Dryers, Locomotives, Pumps, Screens, Shovels, Draglines, Transformers, Euclid Trucks.

STANLEY B. TROYER EQUIPMENT CO.  
Box 97 Phone 500 Crosby, Minnesota



## USED EQUIPMENT BARGAINS

KOEHRING 605 Shovel, s/n 6661, Cat. D-13000 eng., completely rebuilt and guaranteed by Koehring Distributor.

KOEHRING 304 Shovel, s/n 5280, UD-14 eng., operating condition, excellent buy.

KOEHRING 305 Backhoe, s/n 9871, UD-14A eng., XL&W crawlers w/24" shoes, priced right.

UNIVERSAL 546 Primary w/2036 Jaw and Universal #5 Hammermill Secondary, Cat. D-8800 generator, rebuilt.

UNIVERSAL 800 Series Mod. 1032 Portable Secondary, Murphy Diesel eng., new in January 1958, excellent condition.

### HERMAN M. BROWN COMPANY

P. O. Box 843 — Ph. Atlantic 2-0404  
Des Moines 4, Iowa

## FOR SALE

DRAGLINE & CLAMSHELL  
P & H Model 255A, ¾ yd., 45' boom w/ Drag & Clam Buckets.

CRANE  
Lorain Model L-25-K ¾ yd.  
MOTOR GRADER  
Adams Model 412 H.  
MOTOR GRADER  
Adams Model 512.

PAYLOADER  
Hough Model HH, 1½ yd. cap.  
TANKER HEATER  
Littleford Model 115.

ROLLER  
Huber 10 ton 3 wheel with Cat Diesel Engine.  
ROLLER  
Seamon-Andwold 17-wheel, 7 to 20 ton cap.  
FINISHER  
Barber-Greene Model 879A.

DITCHER  
Barber-Green Model 711 mounted on Dodge power wagon.

ASPHALT PLANT  
Hub Portable, Model 25, cap. 10 tons per hour.

## DEEDS EQUIPMENT CO.

8015 E. 45th St. Liberty 5-3331  
LAWRENCE, INDIANA  
913 Main Street Capital 3-2146  
ROCHESTER, INDIANA

## TRUCKS WANTED

Highest dollar value paid for new and used trucks and all kinds of used equipment. All types of truck equipment bought and sold, including war surplus. Write, phone or wire:

### BILL FISHEL

#### Vandevanter Auto Sales

717 So. Vandevanter St. Louis 10, Mo.  
Ph. FRanklin 1-1750

879A, 879B, SA 40, SA 60, & SB 60

SCREED PLATES & TAMPER BARS

## BIG SAVINGS

### OVER 200 SATISFIED CUSTOMERS

Our plates are ½" thick made of high abrasion resistant Manganese Carbon Steel, machined flat and square. Bars are carburized and hardened to 58-60 Rockwell by a special process. Double wear for both. Check your Distributor Price. GUARANTEED satisfaction. F.O.B. Milwaukee, Wis. 2% 10—NET 30.

879A  
8—15" Bars—\$169.00  
2—12" Bars— 38.00

879B-SA 40  
SA 60-SB 60  
8—15" Bars—\$165.00  
2—12" Bars— 37.00

879A-879B  
SA 40-SA 60-SB 60  
2—5' Plates—\$432.00  
2—1' Plates— 107.00

Plate's Not Guaranteed if Overheated.

## CHASE ENGINEERING CO.

1751 N. 56th St.

Milwaukee 8, Wis.

SPring 1-3808

## MUNICIPAL EQUIPMENT

2—M-B Linemarkers Model 6-18 with timers. New cost \$1,000. Sale \$500. Like new—Rebuilt.

1—Econo Liner Marker—Model Mark Rite. Fair condition. \$300.

1—Elgin "81" 3 Yd. Sweeper, new 1952, rebuilt. Sale or Rental.

## EIGHMY EQUIPMENT COMPANY

Pierpont at W. State St.

ROCKFORD, ILLINOIS

WO 4-6706

## FOR SALE

- 1 Koehring 304, ¾ yd. shovel front, like new
- 1 Bucyrus-Erie 16B shovel front, good condition
- 1 American 1¼ yd. shovel front, good condition
- 1 Blaw-Knox 34E Twin Batch Paver

## Sweeney Bros. Tractor Co.

1622 Main Ave.

Ph. ADams 2-3305

Fargo, North Dakota

## "CLOSE OUT"

1—"Cat" 977 Loader, 2¼ Yard Bucket, #6 Ripper, S/N 20A-3817, Series E. Total—1220 Hours—Was \$18,500.00—Now \$15,500.00

1—Unused Insley K-12, Buda Gasoline—Naval storage machine. Has never been in service—Was \$8,500.00—Now \$7,000.00

1—Lorain L-56, 1¼ Yard Shovel, air controls, 1957 Model—Has just been through our shop. Excellent—\$26,000.00 As Crane—\$24,000.00

### Head and Guild Equipment Co., Inc.

"Your Thew-Lorain Dealer"

5501 Navigation—Box 9187  
PH. WA 3-2603 - Houston, Texas

## FOR SALE

56-GMC Tandem C&C Model MW-503 with new motor .....\$2,650

55-GMC Twin Screw 210 H.P. ... \$6,900

1957 White Diesel with 8 speed Road Ranger. Reas.

125 Gas & Diesel Tractors All Sizes.

56-GMC Tandem 8 yd Dump Truck \$4,200

1960—Diamond T. Tandem Diesel 220 H.P. 12 Speed Spicer .....\$15,000

## McGEE TRUCKS, INC.

2535 University Ave., St. Paul, Minn.  
Phone Midway 6-7555

# Manufacturers' Literature

**PORTABLE CRUSHING PLANT:** A bulletin is now available from Gruendler Crusher & Pulverizer Co., 2915 N. Market St., St. Louis, Mo., describing their Flexline Series Single-Pass Portable Crushing plant. According to the manufacturer the unit is designed for mobility in moving from site to site, and has adequate capacity to keep several trucks running. The feeder clutch is operated from operator's platform or from the ground.

For more details circle 148 on Enclosed Return Postal Card.

**INTERCHANGEABLE STEEL FORMS:** A completely standardized, interchangeable system of steel forms for street paving is described and illustrated in a new brochure available from Blaw-Knox Co., Construction Equipment Div., Mattoon, Illinois. The booklet highlights curb and gutter, flexible radius, fixed radius, straight curb, battered curb and sidewalk forms, as well as details and accessories.

Data is also given on how to set up, strip, and maintain steel forms. A few of the main features include fingertip connectors and rigid lock joint connection.

For more details circle 149 on Enclosed Return Postal Card.

**DRIER UNIT:** A new 12-pg. catalog has been issued by Iowa Manufacturing Co., Cedar Rapids, Iowa, illustrating and describing the Cedarapids Portable and Stationary Electric Motor or Combustion Engine Driven Drier Units with medium to large capacity range. Reported benefits described include open grid type lifting flights, highlift discharge for either right or left side, patented smoke box seal, ring gear and pinion or saddle-chain drive and automatic burner control systems.

The catalog also describes how drier operates on the counter-current flow principle using the hottest gases for final drying.

For more details circle 150 on Enclosed Return Postal Card.

**DRAGSCRAPERS AND CABLEWAYS:** A new general folder by Sauerman Bros., Inc., 620 S. 28th Ave., Bellwood, Illinois covers drag scrapers and slackline cableway machines, crescent buckets used with draglines, and data on wire rope fittings and Durolite blocks.

Photographs and line drawings show typical installations and illustrate the various Sauerman methods of excavating and hauling.

For more details circle 151 on Enclosed Return Postal Card.

**WELDING MILD AND LOW ALLOY STEELS:** A 20-pg. catalog on the welding of mild and alloy steels is now available from the McKay Co., 1005 Liberty Ave., Pittsburgh 22, Pa. The book contains information on specifications, operating characteristics, mechanical properties, applications and other pertinent data on the company's mild steel and low hydrogen electrodes available for fabrication of mild and alloy steels.

Several pages of reference charts listing recommended electrodes in the welding of trade name steels, and ASTM carbon and low alloy steels are included. Also, a page on welding terminology, plus a section on the cause and prevention of common welding troubles such as poor fusion, and undercutting is enclosed.

For more details circle 152 on Enclosed Return Postal Card.

**HIGHWAY SIGN LIGHTING:** A new booklet is now available from the Westinghouse Lighting Division, Edgewater Park, Cleveland, Ohio. The 8-pg. publication shows how to use fluorescent equipment to light any type of highway sign.

For more details circle 153 on Enclosed Return Postal Card.

## WHAT ABOUT YOU MR. READER?

Are you still active in the field? Have you moved or changed your position? Unless you send this information directly to us we can't be sure. Sometimes a reader's name is cut from the mailing list because we are not sure that our information as to name, title and address is right. *Your* name might be cut from the mailing list.

### Don't Let This Happen to You

Even if you think we know all about you, please fill in the information requested below and send to us by return mail. Our auditors require proof of accuracy of our mailing list. *You* are the only person who can help us on this. Do it now before you forget, so you can be sure your magazine will always be properly addressed to you. New names cannot be added or old names retained on our list unless we have all this information. *Please print or type.*

#### ROADS AND STREETS

22 WEST MAPLE STREET, CHICAGO 18, ILL.

- ☐ I do receive **ROADS & STREETS** and wish to continue to receive it.  
☐ I do not receive **ROADS & STREETS** but would like to have it.

DATE \_\_\_\_\_

NAME \_\_\_\_\_

TITLE OR OCCUPATION \_\_\_\_\_

FIRM NAME OR GOVERNMENT DEPARTMENT (give street address) \_\_\_\_\_

CITY \_\_\_\_\_  
 (If you have moved give old and new address)

ZONE (if any) \_\_\_\_\_

STATE \_\_\_\_\_

SIGNATURE \_\_\_\_\_

**LOCATE SUBSURFACE GRAVEL BEDS:** A new manual on locating subsurface gravel beds, rock deposits, as well as moisture laden, unstable sub-soils has just been released by Associated Research Inc., 3777 W. Belmont Ave., Chicago 18, Ill. The Barnes Layer Method, described in the manual, utilizes conductance of the earth as measured by a portable electrical instrument, weighing only 20 lb.

These measurements are effective even when gravel and sand strata are covered by layers of clay. Operation is not affected by extraneous noises, vibration or ground currents.

For more details circle 154 on  
Enclosed Return Postal Card.

**STEEL DESIGN AND ENGINEERING:** Four papers which discuss advances in the strength levels, product forms and design applications of constructional steels are in a 59-pg. brochure offered by U.S. Steel, Market Development Div., 525 William Penn Pl., Pittsburgh 30, Pa. The papers describe and compare types of steels that make up modern constructional needs.

Illustrations and descriptions of many actual designs and design concepts show how these steels can be used in structures and equipment to achieve higher strength, lighter weight and lower costs.

For more details circle 155 on  
Enclosed Return Postal Card.

**EPOXY RESINS:** A 29-pg. magazine covering all phases of their work and research in the epoxy resin field has been issued by the Dow Chemical Co., Midland, Michigan. Formulation and properties of unfilled castings, general formulation information, application information and suggested areas of use for Dow liquid epoxy resins are fully described.

Information regarding the manufacturers production facilities and technical services are also enclosed.

For more details circle 156 on  
Enclosed Return Postal Card.

**ASBESTOS-ASPHALT MIXES:** Two new technical bulletins on the use of Johns-Manville's asbaltic asbestos fiber in asphalt mixes are now available from Johns-Manville Research Center, Manville, New Jersey. The application of asbestos fiber to dense graded asphalt paving mixes is covered. Described are the major problems in design of bituminous pavement and the manufacturer's recommendations for correcting these conditions.

Also, the application of asbestos fiber to asphalt curbing is covered. A design mix presently being used for curbing containing asbestos fiber is suggested, and a table of both sand and total gradations for the suggested mix is included.

For more details circle 157 on  
Enclosed Return Postal Card.

**DRILLING RIGS:** The availability of a 20-pg. booklet covering special rock drilling rigs for construction has been announced by Ingersoll-Rand Co., 11 Broadway, New York 4, N.Y.

On-the-job photos show special rigs engineered to meet exact requirements of each job. The booklet is designed to show how contractors and mine owners can create special drilling rigs to meet their own particular problems.

For more details circle 158 on  
Enclosed Return Postal Card.

**TRUCK-MOUNTED CRANES:** Two new 2-color illustrated catalogs on 35-ton and 40-ton truck-mounted cranes have been released by the Insley Manufacturing Corp., P. O. Box 167, Indianapolis, Ind. Included are working photographs, upperworks specifications, crane boom data and line speeds and pulls information. Catalog No. 200-35 is for 35 ton, and Catalog 200-40 is for 40 ton cranes.

For more details circle 159 on  
Enclosed Return Postal Card.

**ELECTRIC SET:** Available from the Allis-Chalmers Mfg. Co., Engine Material Handling Division, Milwaukee, Wisconsin, is a new three-fold, two-color piece of literature telling about their G-226 gasoline engine and the A-C brushless generator that it powers. Specifications of the basic set are included. Important components are illustrated.

For more details circle 160 on  
Enclosed Return Postal Card.

**TREE PLOWS:** A new bulletin has been issued outlining specifications and features of tree plows for the line of crawler tractors by Eimco Corp., P.O. Box 300, Salt Lake City 10, Utah.

The tree plow mounts in place of a standard angle dozer blade on the dozer C-frame with only two bolts, and can be attached and removed in just a few minutes, according to the manufacturer. The boom extends and retracts, and its cutting edge is replaceable premium quality manganese-nickel steel.

For more details circle 161 on  
Enclosed Return Postal Card.

**CONVERSION CHART:** A reference table for Engineers and other executives in wall chart form has been published by Precision Equipment Co., 4411 E. Ravenswood Ave., Chicago 40, Ill. It is said that this conversion chart can be useful for engineers, shop men and other executives.

Included are common conversions such as inches to centimeters or watts to hp. as well as many conversions that are difficult to locate in reference manuals.

For more details circle 162 on  
Enclosed Return Postal Card.

**PAVING FILM:** A film on Surveying has been produced and is available at Wild Heerbrugg Instruments Inc., Main and Covert Streets, Port Washington, L.I., N.Y. A 35 minute motion picture, it is based on the theme that all development has surveying as a foundation.

Theoretical and practical aspects of conducting topographic surveys for a tunnel building project is shown, and surveys of operations of an airstrip, a town survey, and other surveys are also shown.

For more details circle 163 on  
Enclosed Return Postal Card.

**CRUSHING PLANT:** A new catalog describing 18 different models of portable jaw crusher plants has been released by Pioneer Engineering, Division of Poor and Co., 3200 Como Ave., S.E., Minneapolis, Minn. The catalog contains flow diagrams, basic specifications and field photos of this equipment in operation.

Included, in addition to the basic primaries, are the new PRSC plants equipped with Mesabi vibrating screens that permit removal of fines and sized product ahead of the crusher.

For more details circle 164 on  
Enclosed Return Postal Card.

## In the center of Michigan Avenue's Magnificent Mile

### CHICAGO

On Michigan Avenue's "Magnificent Mile" near fine shops, dining, sightseeing, medical center, Furniture Mart, universities yet only a stroll from the Loop and the Lake.

Plus 26 Floors of rooms at reasonable rates, designed for the businessman, family and special group. Full hotel service with convenient municipal parking.

HOME OF THE TIP TOP TAP



Try the Allerton and see on your next Chicago visit.

See your travel agent or "Ask Mr. Foster" for free, teletype reservation service

Telephone SU 7-4200  
TWX CG 3083

**the Allerton Hotel**  
MICHIGAN AVENUE  
AT HURON STREET



# Index to Advertisers

Acme Iron Works .....103, 110  
 Acme Tractor Supply Company .....115  
 Allied Chemical, Barrett Division .....104  
 Allied Materials Corporation .....33  
 Allis-Chalmers .....16 & 17  
 Alpha Portland Cement Company .....22  
 American Gilsonite Company .....87  
 American Steel and Wire Division of  
 United States Steel .....58 & 59  
 Ankrom, Lynn .....113  
 Asphalt Institute, The .....54 & 55

Badger Highways Company .....115  
 Barber-Greene Company .....83  
 Bay City Shovels, Inc. ....18  
 Bethlehem Steel Company .....3, 10 & 11  
 Brengar Co. ....119  
 Brown, Herman M., Company .....121

Cambridge Iron & Metal Co., Inc. ....112  
 Canton Aggregate Co. ....114  
 Capitol Hill Quarry Company .....117  
 Casey & Dupuis Eqp. Corp. ....114  
 Cate Equipment Co. ....113  
 Caterpillar Tractor Co. ....13, 50 & 51  
 Central New York Eqp. Co., Inc. ....112  
 Central-Reynolds Company, The .....27  
 Chapin Cylinder Head Co. ....113  
 Chase Engineering Co. ....121  
 Childers Manufacturing Company, Inc. ....28  
 Cleaver-Brooks Company .....89  
 Cline, F. D., Paving Company .....117  
 Cohen, Leopold, Iron Co. ....116  
 Cohn, S., & Son .....111  
 Colorado Fuel & Iron Corporation,  
 The .....97 & 98

Dallas Brush Manufacturing Co. ....112  
 Darien Corp. ....120  
 Deeds Equipment Co. ....121  
 DeLuca Construction Co. ....119  
 Dick Corporation .....113  
 Diesel Energy Corporation .....109  
 Dougherty, A. L., Co. ....119  
 Dugan, Dan, Oil Transport Co. ....114  
 Dukehart-Hughes Tractor &  
 Equipment Co., Inc. ....119  
 Dun-Co Equipment Co. ....116

Eighmy Equipment Company .....121  
 Eimco Corporation, The .....57  
 EUCLID Division of General  
 Motors Corporation .....24 & 25

Fishel, Bill .....121  
 Flintkote Company, The .....6  
 Ford Motor Company—Industrial  
 Engine Department .....74  
 Freed, Phillip E. ....115  
 French, James C. ....113 & 116  
 Fund Insurance Companies, The .....36  
 Funk Mfg. Co. ....104

Galion Iron Works & Mfg. Co. ....30 & 31  
 General Motors Corporation—  
 EUCLID Division .....24 & 25  
 General Truck Sales, Inc. ....114  
 Gill Equipment Company .....118

Gilson Screen Co. ....106  
 Gleason Equipment, Inc. ....118  
 Goodwin-McElroy Co., Inc. ....117  
 Goodyear .....5  
 Greer Technical Institute .....116  
 Gruendler Crusher & Pulverizer Co. ....117

Hanson Machinery Co. ....26  
 Harding's Inc. ....113  
 Head & Guild Equipment Co., Inc. ....121  
 Heckett Engineering Co. ....116  
 Higbee-Reichard Corp. ....114  
 Hodge & Hammond, Inc. ....112  
 Hotel Allerton .....123  
 Humble Oil & Refining  
 Company .....Third Cover

Illinois Contractors' Machinery Inc. ....119  
 Illinois Road Equipment Co. ....120  
 Ingersoll-Rand Company .....12  
 International Harvester Company,  
 Construction Equipment  
 Division .....8 & 9, 35

Jackson Vibrators, Inc. ....Second Cover  
 Jaeger Machine Company, The .....7  
 Johns-Manville .....95

Kemp, W. D. ....119  
 Kennedy's Van Brush Mfg. Co. ....110  
 Kent Piling Co., Inc. ....117  
 Koehring Company—  
 Koehring Division .....96  
 Kolman Manufacturing Co. ....113

LeTourneau-Westinghouse  
 Company .....63, 64 & 65  
 Lorraine Trading Corp. ....117  
 Lubrecht, William III,  
 Construction Equipment .....117 & 120

Mack Trucks, Inc. ....37, 38, 39, 40  
 Maginniss Power Tool Company ....29  
 Marion Power Shovel Company .....114  
 Markwell and Hartz,  
 Contractors .....112, 113, 115, 119  
 Martin-Roosa Tractor & Equipment  
 Co. ....118  
 McCarthy, W. E., Inc. ....111  
 McConaughay, K. E. ....80 & 81  
 McGee Trucks, Inc. ....121  
 McLean Co., The .....116  
 McLean Construction Company .....112  
 Merritt-Chapman & Scott Corp. ....119  
 Minnesota Branch—  
 (Euclid Division GMC) .....114  
 Mississippi Valley Equipment Co. ....116  
 Monarch Road Machinery Company .....107  
 Morton Salt Company .....101  
 Mutual Truck Parts Co., Inc. ....118

Neenah Foundry Company .....108  
 Neuclear-Chicago Corporation .....68 & 69

Oconto Redi-Mix Inc. ....112  
 Oroville Project Contractors .....117  
 Owen Bucket Company .....23

Portland Cement Association .....73  
 Port Toledo Steel Co. ....111

Ramacciotti Equipment Co., Inc. ....112  
 Rhian, A. J. ....112  
 Roselle Park Tire Co. ....120  
 R. W. Const. Inc. ....115

Soiltest Incorporated .....32  
 Spurgeon, Richard .....120  
 Standard Steel Works .....91  
 Surplus Tractor Parts Corporation .....113  
 Swabb, Frank, Equipment Company,  
 Inc. ....118  
 Sweeney Bros. Tractor Co. ....121  
 Sweeney Brothers Tractor Company .....120  
 Swick-Guth Co. ....107  
 Symons Clamp & Mfg. Co. ....106

Tarrant Mfg. Company .....88, 90  
 Tecnodin, C. A. ....115  
 Texaco Inc.—Asphalt Sales Division .....102  
 Texaco Inc.—Lubrication Division .....14 & 15  
 Thiokol Chemical Corporation .....76 & 77  
 Timken Roller Bearing  
 Company .....Fourth Cover  
 Tri-City Truck & Equipment Co. ....117  
 Trinity Dam Contractors .....115  
 Troyer, Stanley B., Equipment Co. ....120

United States Steel—American  
 Steel and Wire Division .....58 & 59

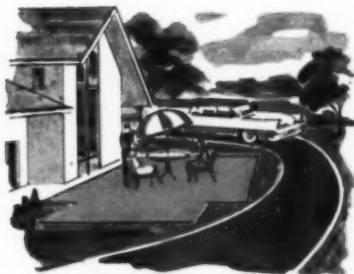
Vandeventer Auto Sales .....121  
 Van Keppell Company, The G. W. ....118

Westport Mach. Co., The .....120  
 Wheel Trueing Tool Company .....34  
 Winer, Ben, Trucks & Equip .....116  
 Worthington Corporation .....21  
 Wright Industries, Inc. ....115

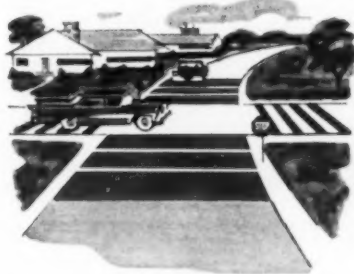
Yarder Manufacturing Co., The .....118



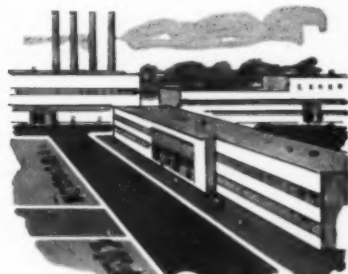
## new Viadon\* and Miradon\* put color into paving



**NEW DESIGN OPPORTUNITIES:** Driveways, tennis courts, patios, pools and parking lots can now be surfaced in pleasing colors.



**TRAFFIC SAFETY:** Curbs, crosswalks, centerlines, speed zones and turn-offs can be permanently indicated in color.



**FACTORIES:** High-strength flooring in different colors distinguishes danger zones, exits, assembly areas, etc.

Viadon and Miradon, developed by Esso Research, bring you *permanently* colored paving in red, green, blue, yellow-gold and white. The color is built in—it cannot wear off. Miradon is especially recommended where high resistance to fuels and oils is needed, such as service stations and airport landing strips, loading zones and parking areas.

These remarkable new materials can be mixed in

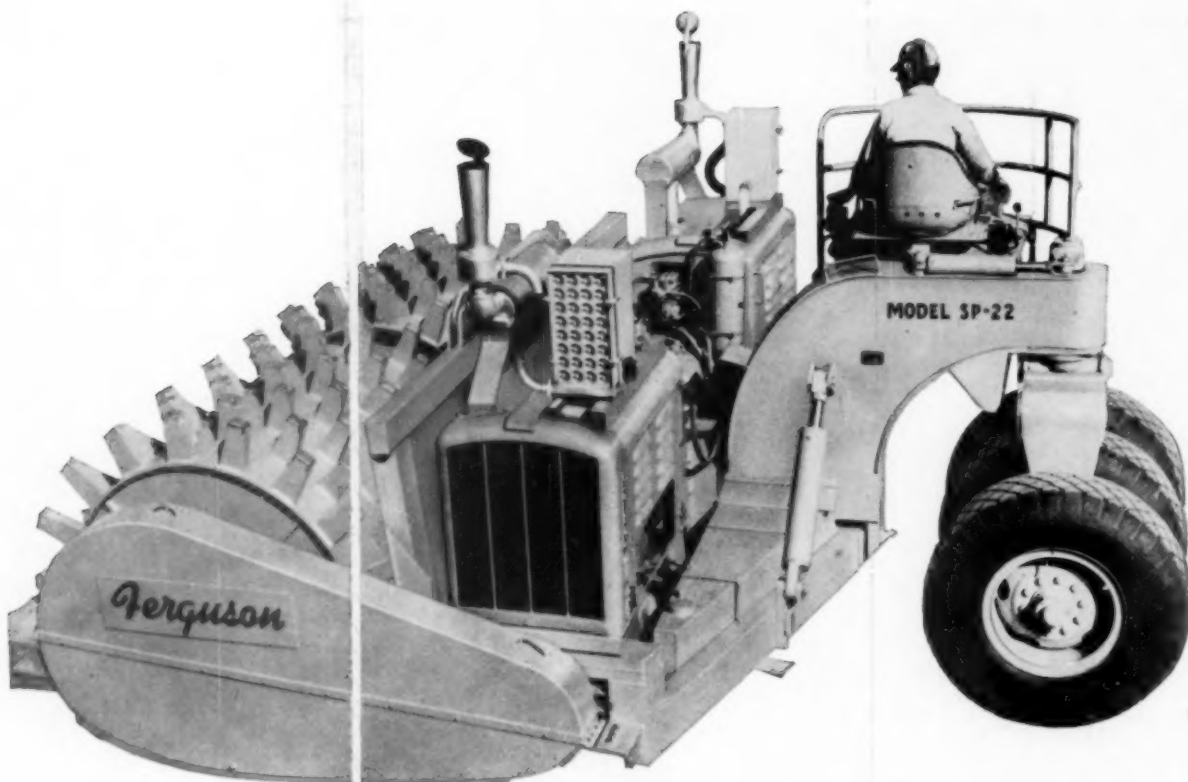
standard asphalt pugmills and laid with existing equipment. They will not set permanently in transit; can be softened by heat if desired. No special storage facilities are needed.

For more facts about this designer's dream-come-true, or for technical assistance in applying Viadon and Miradon, write us at 15 West 51st Street, New York 19, New York.

\*Trademarks

HUMBLE OIL & REFINING COMPANY





## Why Ferguson put Timken® bearings on this giant new roller

When the hundreds of feet on the drums of this new Ferguson SP-22 tamping roller run over ground, it's like hitting the earth thousands of times a minute. To take the thousands of shocks, Shovel Supply Co., the roller builder, specified Timken® tapered roller bearings for the drums, wheels and steering kingpin.

Their tapered design lets Timken bearings take any

combination of radial and thrust loads. Full-line contact between rollers and races gives Timken bearings extra load-carrying capacity. When the roller runs or turns on level or uneven ground, Timken bearings take the shocks from any direction. And precision manufacture assures bearing accuracy to give long trouble-free, practically friction-free life with minimum maintenance.



**EXTRA SAVINGS** are yours when you use the services of Timken Company graduate sales engineers. Working with you at the design stage, they can often solve bearing problems on-the-spot.

...for more details circle 324 on enclosed return postal card



Industry rolls on  
**TIMKEN®**  
tapered roller bearings

The Timken Roller Bearing Company, Canton 6, Ohio. Cable: "TIMROSCO". Makers of Tapered Roller Bearings, Fine Alloy Steel and Removable Rock Bits. Canadian Division: Canadian Timken, St. Thomas, Ontario.



